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ASTRONOMICAL OBSERVATIONS
MADE AT
THE HONORABLE
THE EAST INDIA COMPANY'S OBSERVATORY
AT MADRAS

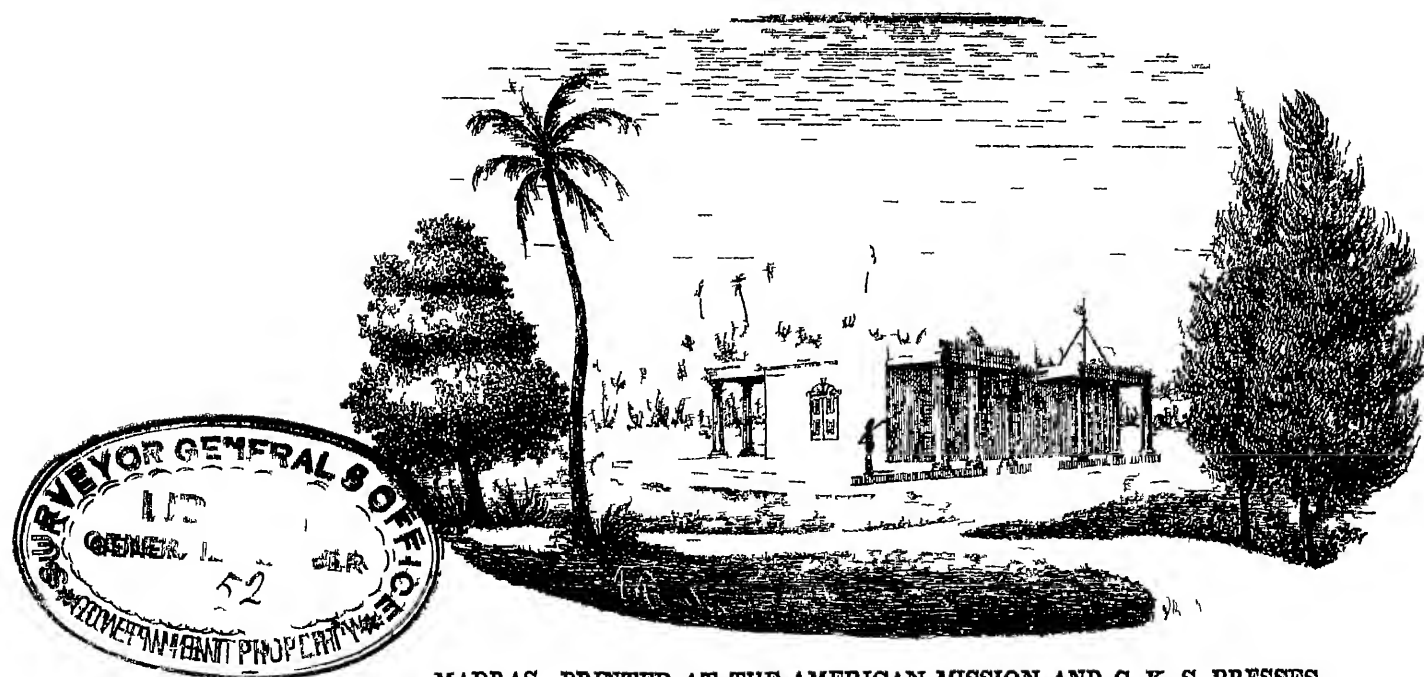
IN THE YEARS 1843—1847

TOGETHER WITH
THE RECOMPUTATION OF THE SUN AND MOON AND PLANETARY OBSERVATIONS
SINCE 1831

BY THOMAS GLANVILLE TAYLOR ESQ FRS & FRAS

ASTRONOMER TO THE HONORABLE COMPANY

Printed by Order of the Madras Government



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PREFACE

IN the fifth Volume of the Madras Astronomical Observations will be found the result of an examination of the divisions of the Madras Mural Circle in which it appears—that the determinations of North Polar Distance which had up to that time been given are all erroneous to an amount (in extreme cases) of ± 43 and in a paper read at the Meeting of the Royal Astronomical Society on the 13th June 1845 I have shown that the hitherto presumed Longitude of the Madras Observatory was erroneous to the amount of 12.6 seconds of time. Now the mischief introduced by these conjoint errors was that all the determinations of North Polar Distance required correction within the above limits and that the comparison of the Right Ascensions of the Sun, Moon and Planets with the places assigned in the Nautical Almanac were likewise to some extent erroneous. To remedy this evil I had re-computed and rearranged all the observations of the fixed stars down to the end of 1842 and their places thus amended are given in Volume VI of these Observations what remained to be done viz the re-computation of the observations of the Sun, Moon and Planets and the re-computation of the places from the Nautical Almanac has been performed in the present volume in addition to which the places of the Sun, Moon and Planets observed since the end of the year 1837 have now been added so as to bring all the observations complete up to the end of 1847.

Agreeable to the practice which had been followed in former volumes I have given the indications of the Spirit Level and the result of observations for Collimation and Azimuth for the Transit Instrument and the Index Error for the Mural Circle the latter being determined from the observation of known stars as well as from observations with the Reflecting Collimator these values in addition to the facilities they afford to any one who may have occasion to refer to the original observations are moreover the best testimony I can offer of the consistency and stability of the Instruments and what is equally important as regards observations with the Transit Instrument I have given the daily rate of the Clock for the period following that in which it was last given viz the end of the year 1837.

In choosing for myself a plan for observing during the period 1843—1847 I have thought it inexpedient to increase the present Madras Catalogue of 11,015 Stars and have therefore contented myself with re-examining from year to year the places of the Stars forming the Nautical Almanac Catalogue which if it has not already done much in the way of investigating the nature of the irregular changes to which those Stars have in some instances been liable will in the end I venture to hope tend to so desirable an issue in addition to this I have re-examined—on a more limited scale the places of several of the *proper motion stars* or of Stars in which a suspicion of proper motion existed the Catalogue is not a very large one but having been performed at leisure during one, two or three years I venture to hope that its claims for accuracy will still render it acceptable and valuable.

Following the Planetary Observations—are given the Observations of the Comets of 1840 and 1845 and after the Catalogues—will be found the Observations of Eclipses Occultations, and Moon Culminating Stars the latter class may without doubt lay claims to ordinary accuracy but the former—are by reason of the insufficient means placed at my disposal—necessarily only mere approximations it gives me pleasure however in closing this volume—to be able to assert that the Equatoreal Instrument *ordered six years ago by the Honorable Count of Directors* is now in fair train of being executed and that the plea of inefficiency here admitted will not again be made

MADRAS OBSERVATORY }
 3d January 1848 }

T G TAYLOR
H C Astr nome

	h	m	
<i>Longitude of the Madras Observatory</i>	5	20	57 28 E
<i>Latitude</i>	13	4	8 2

ERRATA IN VOLUME VI

<i>Rf</i> Page	<i>E</i> Li	<i>Crr t</i>	<i>Raf</i> Page	<i>Er r</i> Lin	<i>C i t</i>
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xi	6 — 44 9	— 41 33' a l— 1	lxxi	3 — 243	— 3 43
xiii	30 — 8 0	— 8 8	lxxiv	8 — — 9	— — 07
x	30 — — 46	— — 14	lxxv	2 — 21 76	— 27 76
	37 — 47 28	— 47 27	lxxx	31 — 48 22	— 48 31'
x	2 — ζ	— φ	lxxxii	2 — 8	— 52)
xv	— 1	—	lxxii	4 — 1 23	— 0 83
xv	16 — — 40	— — 48	lxxix	17 — J Cancel	— (0 Can
xv	26 — — 031	— + 041	xc	23 — 1 8	— 3 31
xvii	31 — 51 80	— 1 66	x	1 — 4	— 8
xx	7 — 17 8	— 17 48''	xc i	1 — + 016	— t 016
xx	7 — —	— — 2 T B	xcii	6 — 7 61	— 6 26
xx	44 — — 027	— + 001	xcvi	8 — 9 00	— 19 00
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xxviii	5 — 38 2	— 38 53	cxii	— 7	— 6
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xxxv	29 — + 33 27 17 1	— + 33 34 0 71	cxv	38 — 11	— 1
xxxviii	16 — — 3 37	— 3 57	xx	28 — 30	— 33
xl	3 — 2 0	— 2 9	cxv	17 — 2	— 2
xl i	22 — 4 I eporis	— 3 L i is	xxvi	28 — 1	— 2
xl x	9 — 008	— + 008	cxviii	37 — 2	— 2
xl x	45 — 008	— + 008	cxix	22 — 3	— 8
l	30 — — 010	— + 021	cxix	2 — 17 99	— 16 77
l	1 — — 010	— — 0 10	xxx	22 — — 14	— + 16
l	— + 0 2	— + 0	xxxvi	26 —	— 0
l	23 — — 61 7 4 9	— — 61 28 0 9	c xv	3 —	—
l	21 — 2 38'	— 2 39	xx ix	36 — 6) Vrgu s P	— 80 U i a M j 6
l	— 38 0 and t 27'	— 48 0 and 00	xxix	38 — 80 Ursi Maj g	— 69 V i s P
lv	19 — 9 nd— 3	— 8 and t 17'	cli	17 — s	—
lvi	8 — + 33'	— — 07	xli	33 — 3 m	— 36
lvi	5 — 17 58 40 & t 0 6	— 17 0 &— 037	cxli	33 — — 0 6	— — 043
lix	1 — 0 21	— 0 20	cxlv	— 1 1 01	— 0 91
lx	19 — 1 Aur gæ	— 54 Aur æ	lvii	18 — 17 11 and t 2	— 8 9' nl— 0
l	39 — 17 85	— 19 8	cxl x	38 — — 0 0 '	— — 2 0
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ERRATA

Ref	For	Correction	Ref	For	Correction
Pg	Line		Pg	Line	
l	26 f 28	read 29	cxv	4 fo 12 1 v 1 + 18	118 72' and + 07'
lx	10 — 44	— 47	cx	28 — 41 31	— 11 31
lxiii	8 — 28 53 93 and + 21'	— 29' 3 93 nd — 31	cxv	44 — — 23	— + 77
l	35 — 23 9 rpentis	— 21 S rpentis	ccxvi	4 — 7 25 and + 0.0	— 38 id — 002
lviii	10 —	—	cxvi	14 — — 0 30	— — 0 3
lix	38 — 8 wr g	— —	ccxviii	42 — + 5 10	— 1 18
l	23 — 9 S rpm	— 19 S orp 1	ix	19 — 30 82	— 30 7
lx	28 — 11 49	— 20 69	cxxx	4 — 3 30' a 11 — 12	— 3(3(an) — c'
lii	8 — 48 82 d + 12	— 52 44 an l + 23	cl	30 — — 68 0	— — 38 (
liii	19 — 51 26 d + 21	— 1 76 and + 12	cxlii	7 — — 8 43	— — 18 43
lxxiii	23 — 46	— 42 97	cxlv	4 — + 0 11	— — 0 8)
lxxiv	29 —	—	clv	21 — + 0 11 24	— 0 00
lxx	30 —	— "	cl	40 — — 0 11'	— — 0 0)
lxv	19 — 32 79	— —	clviii	3(— — 0 00	— + 0
lxv	21 — —	— 5 Obs	clx	14 — + 91	— 10 11
lxxv	21 — — an l —	— 32 79 11 + 24	clx	7 — — 0 2(	— 10 10
l	4 — 52 82	— 3 32	l	10 — + 0 08	— — 0 08
lxvii	4 — — 014	— — 002	celx	13 — 10 32	— 10 0
lxvii	24 — 29	— 30	cl	20 — — 0 3	— 10 22
lxxvii	42 — 41 36	— —	lx	22 — + 0 38	— — 0 02
lxxviii	21 — 24 88'	— 1 88'	cel i	16 — + 0 7'	— — 0 01'
lxx	25 — 3 1 79 and — 26'	— 2 8 15 & — 16	cl i	21 — — 0 87	— — 0 02'
lxxx	6 — 7	—	celiv	18 — + 0 30'	— 10 0
lxx	4 — 7	— 7	celxvi	4 — — 0 21'	— — 0 2'
clxxxiv	24 — 8 wrong	— —	celxvi	13 — + 0 2'	— — 0 2(
lxxxv	17 — 41 17 45 and + 47"	— 40 6 21 & — 11'	clxv	40 — + 0 2(	— 10 17
ix	9 — wio g*	— —	clxvii	8 — — 0 32	— — 0 13
cu	1 — 48 46" and — 0 08'	— 0 12" and — 1 7 "	celxvii	28 — + 0 2'	— — 0 11
cli	19 — 8 wio g	— —	celxviii	42 — — 0 03	— — 1 /
ccvi	42 — 41 68'	— 3 82'	cel ix	27 — — 0 4	— — 0 21
viii	33 — R	—	cel x	34 — + 1 21	— 10 11
cx	28 — 23 21' and + 14'	— 3 43" and — 21	lxxx	34 — + 0 23	— 10 1
xi	29 — 24 06"	— 23 63'	cel	39 — — 0 18	— 10 82
	34 — 1 39 nd — 0	— 4 87 d — 20'	clx	40 — + 1 32	0 13
v	4 — 10 42 1 + 088	— 1 42 1 + 070	lx	5 — N 73	— N 72

ERRATA IN VOLUME VII

Ref	For	Correction	Ref	For	Correction
Pag	Line		Pag	Line	
	30 f P = 1 3	read P = 1 4'	129	47 for 28 7	real 2) 7
	2 — East	— West	(1)	22 — re axa i d	— re summed
xx	8 — + 2 49	— + 2 79	(3)	11 — See errata	— —
34	32 — — 20 3	— — 2 93'	(70)	last — Mr William Allen	— Mr Richard Allen
129	47 — 52 6	— 3 6			

TRANSIT INSTRUMENT AND OBSERVATIONS, ETC

A DRAWING and minute description of the Madras Transit Instrument having been given in Vol I of these Observations it is only necessary here to state that the Instrument was made by Dolland that the focal length of the telescope is 61 inches with a clear aperture of $3\frac{1}{2}$ inches and that a power of 150 has on all occasions been employed the pivots—originally of bell metal—had become so much worn in the year 1833 as to render it necessary to return them on which occasion collars of steel were applied by Mr Barrow the Honorable Company's Instrument maker at Calcutta these I am happy to say have done their duty well and now—after thirteen years wear are scarcely if at all altered in appearance or figure—indeed with the exception that the micrometer screw is out of order the Instrument is in as good working condition as when first erected

The rapid growth of vegetation during the period 1836—1840 having completely placed it out of my power to obtain a view of the Southern Meridian Mark I have necessarily been reduced to dependence upon the Northern Mark alone added to this the dilapidated state of the micrometer screw—which has in consequence remained unemployed—has since 1840 prevented my continuing the use of the Reflecting Collimator or by other means ascertaining the Collimation and Azimuth errors I have in fact been reduced to the old fashioned plan of inverting the Axis and making use of screws instead of figures to get quit of Collimation or Azimuth errors In a general way the coincidence of the centre wire with the Mark has been examined twice a day at six o'clock in the morning and at the same hour in the evening and the examination of the Horizontal Axis with the spirit level has usually been performed twice during the week Inversion of the Axis for the examination of the Collimator has been resorted to twice during the month and has been performed generally on the 1st and 15th In cases however in which the centre wire at evening or morning observation has failed to bisect the Meridian Mark recourse has immediately been had to Inversion The adjustment to the Meridian Mark has on an average not exceeded three times during the year and that for Collimation not nearly so often the amount to be corrected for has usually been very small having only on one occasion exceeded two seconds the level which is a very excellent one has as hitherto been applied twice a week and the correction due to error of level computed and applied to each observation On consulting the results in Vol IV it appears that the radius of the Illuminating Pivot was smaller than that of the other Pivot 0.80 satisfied with the constancy of this result from the observations of 1834—1838 no further attention was bestowed upon this subject until the 6th May 1842 when from three Inversions of the Axis the Illuminating Pivot was found to be smaller than the other Pivot by .11 since this time two determinations only have been obtained thus

1846 July 22d the Illuminating Pivot was smaller than the other	
1847 Sept 17th do do do	

<i>Values of P</i>
2 13
2 11

It only remains for me to state that a late careful examination of the Pivots assures me of their having retained their perfectly circular form and that during the entire period 1838—1847 the Illuminating Pivot has continued to occupy the *Western Pier*

I measure the diameter of the small dot which I graduated on the diameter of the Pivot—nearest to the 10 feet point of the 360 feet N.P.D.

The Eye Piece is supplied with five vertical and one horizontal fixed wires and one vertical moveable wire the Equatorial Interval between these was determined in 1836 and is given in Vol IV these numbers hold good up to the 25th April 1838 when several of the wires were found broken on a new set being put in the following were found to be the Equatorial Intervals

From 1st wire to the centre	+	54 856
2d ——— — — —	+	27 330
4th ——— — — —	—	27 470
5th ——— — — —	—	54 400

Rendering necessary the correction $+\frac{064}{\sin N P D}$ to reduce the mean of five wires to the centre

October 13th 1838 found two of the wires broken on putting in a new set the Equatorial Intervals were found to be

From 1st wire to the centre	+	54 717
2d ——— — — —	+	27 208
4th ——— — — —	—	27 670
5th ——— — — —	—	54 929

Rendering necessary the correction $-\frac{135}{\sin N P D}$ to reduce the mean of five wires to the centre

November 27th 1842 The wires appeared to have become bent by reason of the excessive dampness of the air I put in a new set when the Equatorial Intervals were found as follows

From 1st wire to the centre	+	54 982
2d ——— — — —	+	27 459
3d ——— — — —	—	27 410
4th ——— — — —	—	54 946

Rendering necessary the correction $+\frac{017}{\sin N P D}$ to reduce the mean of five wires to the centre

On the 28th October 1844 I accidentally broke one of the wires on putting in a new set the Equatorial Intervals were found to be

From 1st wire to the centre	+	55 218
2d ——— — — —	+	27 561
3d ——— — — —	—	27 250
4th ——— — — —	—	54 969

Rendering necessary the correction $+\frac{113}{\sin N P D}$ to reduce the mean of five wires to the centre

January 9th 1845 I took out the wire frame to examine the wires under an impression that the center wire was not tight though however proved not to be the case on applying fresh varnish to the ends of the wires the following were found to be the Equatorial Intervals

From 1st wire to the centre	+	54 790
	+	27 765
	—	26 985
	—	54 760

Rendering necessary the correction $+\frac{0162}{\sin N P D}$ to reduce the mean of five wires to the centre

On the 21st October 1845 a further alteration was produced in the Equatorial Intervals by reason of dust having settled upon the wires in removing which the wires were displaced the Equatorial Interval now appeared to be

From 1st wire to the centre	+	54 980
2d ——— — — —	+	27 840
4th ——— — — —	—	27 140
5th ——— — — —	—	54 880

Rendering necessary the correction $+\frac{0160}{\sin N P D}$ to reduce the mean of five wires to the centre

On the 8th February 1846 whilst endeavouring to clean some dust off the wires the horizontal wire was broken on which I removed the whole and put in a new set of spider web lines. The Equatorial Intervals now appeared to be

From 1st wire to the centre	+	54 510
2d ——— — ———	+	27 150
4th ——— — ———	—	27 730
5th ——— — ———	—	55 380

Rendering necessary the correction $-\frac{0.290}{\text{in N P D}}$ to reduce the mean of five wires to the centre

On the 1st January 1847 the wires were displaced in endeavouring to remove some dust which had settled on them the Equatorial Intervals now appear to be

From 1st wire to the centre	+	54 070
2d ——— — ———	+	26 530
4th ——— — ———	—	27 800
5th ——— — ———	—	55 680

Rendering necessary the correction $-\frac{0.580}{\text{in N P D}}$ to reduce the mean of five wires to the centre

A further and final alteration in the position of the wires took place on the 1st April 1847 in the act of removing the dust which had settled on them the Equatorial Intervals now appear to be

From 1st wire to the centre	+	54 390
2d ——— — ———	+	27 020
4th ——— — ———	—	27 950
5th ——— — ———	—	55 480

Rendering necessary the correction $-\frac{0.400}{\text{in N P D}}$ to reduce the mean of five wires to the centre

I am quite at a loss to account for the unusual quantity of black dust which has from time to time during the last two years been so frequently deposited on the wires it can only be derived from the varnish with which the inside of the instrument is coated losing its hold on the metal

ERROR OF LEVEL OF THE TRANSIT AXIS

In consequence of the inequality of the Pivot as just stated the indications of the Spirit level (L—P) require to be corrected by the amount P to give L the true error of level of the axis. The method by which the values of P as given above were arrived at is however liable to some objection inasmuch as it may be supposed that each Pivot wears a bed for itself in the iron on which it reposes of a curvature corresponding to its own radius and that on inverting the axis the large Pivot does not come to the same bearings as did its predecessor the smaller one on which account the values of P just found will be too large. In this view of the case I have employed for P 0.80 down to the end of 1840 P = 1.3 from 1840—1844 and 1.80 since that period as follows

The method has alluded to that is generally employed by applying the Spirit level with the Illuminating Pivot East as well West

ERROR OF LEVEL OF THE TRANSIT AXIS

(Illuminating Point East)

D	L—P	M	D	L—P	M	D	L—P	M
1838			1838			1838		
Jan 4	2 43 E		June 26	0 10 W		Nov 26	5 00	
7	2 30		29	0 03 E		29	4 25	
10	2 24		July 2	0 42		Dec 3	4 40	
13	3 03		5	0 32		6	4 35	
16	2 85		8	0 68		9	5 15	
19	2 92		11	0 38		12	4 90	
22	2 35		14	0 40		15	4 55	
25	2 47		17	0 30 W		18	4 20	
28	1 50		20	0 46		21	4 62	4 90 E
29	1 50		23	1 36		24	4 03	P = 0 80
31	2 20		26	0 75				L = 4 10 E
Feb 3	1 96		29	0 15 E		27	3 38 E	
6	1 88	2 27 E	Aug 1	0 10 W		31	2 90	
9	2 15	P = 0 80	4	0 24 E		1839		
12	2 27	L = 1 47 E	6	0 81 W		Jan 2	2 90	
15	1 65 E		9	0 71		5	3 60	
18	1 33		11	0 59		8	4 10	
21	1 38		14	0 34 E		11	3 25	
24	1 32		17	0 65		14	3 75	3 49 E
27	1 31		20	0 55		17	4 05	P = 80
March 2	1 44		23	0 45				L = 2 69 E
5	1 35		26	0 60		20	2 38 E	
8	0 51		29	0 53 W		23	2 45	
11	1 00		Sept 1	0 50		26	1 95	
14	0 87		4	0 55		29	2 87	
17	0 85		7	1 35		Feb 1	3 30	
20	1 41		8	1 25		4	2 55	
23	2 19		11	2 42		7	2 62	
26	1 12		14	0 63 E	0 34 W	11	2 20	
29	1 08		15	0 10 W	P = 0 80	14	2 10	
April 1	1 11		17	0 31 E	L = 1 14 W	17	3 65	
4	1 30		21	0 76 E		18	2 75	
7	1 16		24	1 30		21	2 50	
10	1 25		27	1 64		25	2 90	
13	0 90		30	0 54		28	2 33	
17	0 55		Oct 1	0 01 W		March 3	2 05	
20	1 24	1 16 E	4	0 32 E		6	1 95	
23	0 66	P = 0 80	5	0 65		9	2 00	
26	0 81	L = 0 36 E	8	0 55		12	1 75	
29	0 33 W		9	0 20		15	2 15	2 39 E
May 2	0 37		12	0 50		18	1 90	P = 0 80
5	0 20		15	1 30		22	2 00	L = 1 59 E
9	0 85		17	2 17		25	2 25	
12	0 82		20	1 95		28	0 0 W	
15	0 77		23	1 80	1 05 E	I raised the East end of the axis		
18	0 63		26	2 05	P = 0 80	28	5 40 E	
21	0 74				L = 0 25 E	29	6 12	
24	0 76					April 1	6 05	
27	1 23					4	5 80	
30	0 64					8	6 12	
June 2	0 29		Nov 1	3 01 E	3 11 E	11	4 87	
5	1 51			3 20	P = 0 80	14	5 50	
8	0 59				L = 2 31 E	17	5 62	
11	0 74		5	4 37 E		20	6 25	
14	0 31		8	5 00		23	4 65	5 55 E
17	0 33		11	5 95		26	5 30	P = 0 80
20	0 11		14	5 75		29	4 90	L = 4 75 E
23	0 42		17	6 30				
			20	4 93				
			23	5 62				

ERROR OF LEVEL OF THE TRANSIT AXIS (Continued)

(Illuminating Point West)

D	L—P	M	D	L—P	M	D	L—P	M
1839			1839			1840		
May 2	3 83 E	Hot winds	Nov 11	13 50 E		June 18	2 77 E	
6	2 75		19	9 17		22	1 60	
9	0 14		25	8 02		25	0 95	
12	3 50 E		Dec 2	6 95 E		26	0 55	
13	2 19		9	5 24		29	6 48 E	
16	3 41		16	5 90		July 2	6 45	
20	3 45		23	6 95		3	5 55	
23	3 40		30	6 00		8	6 65	6 60 E
26	3 45		1840			11	3 69	P = 0 80
29	3 40		Jan 6	7 02		14	7 48	I = 5 80 E
June 1	3 85		14	7 30		16	3 76 E	
4	3 87		17	7 25		19	3 07	
10	2 93		20	7 55		23	2 40	2 71 E
13	4 70		24	8 35		26	2 25	P = 0 80
16	3 73		27	7 65		29	2 05	L = 1 91 E
19	3 85		Feb 3	7 02		Aug 1	1 38 E	
22	3 15	3 53 E	6	6 50		4	1 80	
25	4 65	P = 0 80	9	6 82		7	1 80	1 72 L
28	3 40	L = 2 73 E	12	6 50	6 83 E	10	1 60	P = 0 60
July 4	3 05		15	6 85	P = 0 08	14	2 05	L = 0 92 E
8	0 81 E		18	6 30	L = 6 03 E	17	2 87 L	
11	2 65		21	6 10 E		20	3 60	
14	2 05	2 42 E	25	6 05		23	2 75	
17	2 20	P = 0 80	28	6 5	6 11 E	26	2 25	
20	2 80	L = 1 62 E	Mch 2	5 95	P = 0 80	29	3 15	
23	5 30 E		5	6 12	L = 5 31 E	Sept 1	4 18	
26	5 58		8	5 50 E		4	4 90	
29	6 76	6 12 E	11	5 67	5 39 E	7	3 97	
Aug 1	7 30	P = 0 80	14	5 30	P = 0 80	10	4 25	3 53 E
5	5 65	L = 5 32 E	17	5 08	L = 4 59 E	14	3 75	P = 0 80
8	6 95 E		20	4 09 E		17	3 20	L = 2 73 E
11	8 55		23	3 90	L = 3 19 E	21	7 42 E	
14	7 25		26	5 00 E		24	6 58 E	
17	7 97		28	5 25		28	4 85 E	
20	8 15		31	5 65		Oct 1	3 35	
23	7 83		April 3	5 95	5 37 E	5	3 80	
26	7 90		6	5 35	P = 0 80	8	4 67	4 35 E
29	8 00	7 75 E	9	5 05	L = 4 57 E	12	4 85	P = 0 80
Sept 2	7 53	P = 0 80	13	4 35 E		15	4 57	I = 3 55 E
5	7 35	L = 6 95 E	16	4 50		18	2 75 E	
8	8 90 E		21	3 88		19	2 39	
11	9 30		25	4 80		22	2 97	
14	9 45		28	4 75		27	4 00	} H y rain
17	9 25	9 19 E	May 2	4 12		30	9 51 E	
20	8 93	P = 0 80	5	4 25		Nov 2	8 58	
23	9 32	L = 8 39 E	8	3 68		5	8 98	
26	8 08 E		11	3 80		9	14 25	
29	7 25		14	3 68		14	7 57	
Oct 2	6 40 E		18	3 85		17	6 40	
5	6 32		21	4 10		21	14 71	
8	6 00		25	3 67		24	10 66 E	
11	6 50		28	3 40	3 99 E	27	8 25	
14	6 55	6 33 E	31	3 69	P = 0 80	30	8 30	
17	6 35	P = 0 80	June 3	3 35	L = 3 19 E	Dec 4	5 42 E	
20	6 18	L = 5 53 E	6	2 30 E		8	4 75	
28	8 30 E		9	3 10		11	4 50	
N 4	10 60		15	2 25				

ERROR OF LEVEL OF THE TRANSIT AXIS (Contd.)

(Ill m t g P t W st)

D	L—P	M	D	L—P	M	D	L—P	M
1840			1841			1841		
Dec 14	4 42 E		J ly 14	4 55 L		Dec 8	7 60 L	
18	4 92		17	4 80		10	8 25	
21	4 00	4 71 E	19	5 10	5 08 E	13	7 88	
24	4 64	P = 0 80	22	5 80	P = 1 40	15	7 55	
28	5 05	L = 3 91 L	25	5 60	L = 3 68 E	18	7 00	
1841			27	6 10 E		20	7 10	
Ja 2	3 88 E		29	6 55		22	7 77	
5	4 55		31	7 00		25	8 40	
8	4 45		Aug 4	7 30		28	7 88	
11	5 22	4 57 E	6	6 88		31	8 24	
15	5 40	P = 1 40	8	7 00		1842		
18	3 92	L = 3 17 E	11	6 55		J n 2	8 10	8 01 E
19	6 36 E		14	6 80		4	8 65	P = 1 40
23	7 30	6 81 L	16	7 00	6 77 E	7	7 80	L = 6 61 E
26	6 05	P = 1 40	18	6 55	P = 1 40	10	6 80 L	
30	6 65	L = 5 41 L	20	6 75	L = 5 37 E	13	6 25	
Feb 2	8 25 L		23	7 10 E		15	6 70	
5	8 98		25	7 50		17	6 84	
8	7 93		27	7 87		20	7 25	
11	8 92		30	8 30		22	7 80	
15	8 50		Sept 2	9 88		25	7 70	
19	8 95		4	8 50		27	7 00	
22	8 5		8	7 25		31	6 55	6 89 L
25	8 38		10	8 00		Feb 2	6 25	P = 1 40
March 1	8 75		13	8 70		5	6 70	I = 5 49 L
4	7 98		15	10 55		8	7 20 L	
10	7 50		18	8 87		11	7 64	
13	8 70		20	8 70		14	6 12	
16	9 25		23	8 30		15	6 88	
Apr 2	7 95		25	8 70		17	6 20	
5	7 95		28	9 00		20	6 70	
8	8 15		30	8 85		22	7 90	
13	7 25		Oct 2	8 20	8 21 E	24	7 40	
16	7 60		5	7 77	P = 1 40	26	7 25	
19	8 00		8	8 00	L = 6 81 E	28	7 40	
22	7 13		12	10 00 E	H y a	M rcl 2	7 20	
26	7 80		14	10 30		5	7 70	
May 1	7 40		16	11 02		7	7 40	
6	7 00		20	10 35		9	7 88	7 31 L
10	7 28		22	10 40		11	8 00	P = 1 40
14	7 75		25	11 00	10 59 E	14	8 10	I = 5 91 L
20	8 20		28	11 25	P = 1 40	16	6 88 L	
25	7 80		30	10 40	L = 9 19 E	18	6 10	
28	7 55	8 04 L	Nov 2	9 40 E		20	5 75	
June 2	8 27	P = 1 40	5	8 40		22	5 70	
5	7 50	P = 6 64 E	7	7 30 E		24	6 40	
7	6 10 E		8	7 00		26	6 70	
10	6 30		10	6 35		29	7 00	
15	5 62		13	7 00		31	6 10	
21	6 00		14	6 20		Ap 1 2	5 50	
25	6 20		16	6 65	6 92 E	4	6 20	
28	6 50		19	7 20	L = 1 40	6	7 49	
30	5 87	6 04 E	22	7 62	P = 5 52 E	8	7 10	
July 3	6 10	P = 1 40	26	8 00 E		10	6 76	6 43 L
5	5 70	L = 4 64 E	30	8 20		12	6 40	P = 1 40
8	4 80 E		Dec 2	8 80		14	6 35	L = 5 03 E
12	4 88		5	9 80		16	6 80 E	

(Ill at g P t W t)

D	L—P	M	D	L—P	M	D	L—P	M
1842			1842			1843		
April 18	7 00 E		Sept 23	2 21 W		March 6	1 08 W	
20	7 10		26	1 83		9	0 65	
21	7 87		29	1 86	1 91 W	13	0 66	
23	7 55		Oct 3	1 46	P = 1 40	16	1 29	
25	7 75		6	1 23	L = 3 31 W	20	0 80	
27	8 88		9	3 25 W		23	1 71	
28	7 75	7 63 E	11	3 01		27	1 26	
29	8 00	P = 1 40	13	2 80	2 72 W	30	0 72	
30	7 62	L = 6 23 E	17	2 36	P = 1 40	April 3	1 36	
My 6	11 22 E		20	2 21	L = 4 12 W	6	0 8	
I r sed tl	W d of the A 11		25	0 41 W		10	1 67	
6	0 39 E		27	0 66 E		14	1 70	
9	0 42 W		29	0 62		17	1 20	1 15 W
12	0 25		No 1	0 20		19	1 35	P = 1 40
15	0 52		4	1 04		22	1 23	L = 2 55 W
18	0 50		8	1 35	0 96 E	25	1 83 W	
21	0 72		11	1 35	P = 1 40	28	1 49	
24	0 65		14	1 54	L = 0 44 W	May 1	1 53	
27	0 71		18	3 33 E	3 15 E	5	3 63	
31	1 42		21	3 26	P = 1 40	6	2 05	
June 3	1 49	0 75 W	24	2 85	L = 1 75 E	9	2 44	
8	1 67	P = 1 40	Adjuted f	C ll t on and A muth		12	2 20	2 12 W
9	1 02	L = 2 15 W	29	1 18 W		16	2 41	P = 1 40
Adj t d f A muth			Dec 2	1 98		19	1 48	L = 3 52 W
11	3 67 W		5	1 86	1 99 W	23	1 07 E	
24	2 85		8	2 69	P = 1 40	24	1 60	
18	2 63		12	2 23	I = 3 39 W	27	0 75	
21	2 77		15	2 72 W		30	1 24	
24	2 69		19	2 88		June 3	1 47	
28	3 69		22	2 98		6	0 78	
July 1	3 42		24	2 80	2 99 W	8	1 22	0 99 L
4	3 07		27	3 41	P = 1 40	12	0 43	P = 1 40
8	2 81		30	3 15	L = 4 39 W	14	0 35	I = 0 41 W
12	3 43	3 13 W	1843			17	0 17 W	
15	3 48	P = 1 40	Jan 3	1 00 W		20	0 97	
18	3 03	L = 4 53 W	4	0 07		23	0 19	
21	2 08 W		7	0 64 E	0 12 W	26	1 64	
25	3 25		10	0 33 E	P = 1 40	30	0 62	
26	2 82		14	0 53 W	L = 1 52 W	July 3	0 25	
29	2 86		Adjuted tl	L vel		6	0	
Aug 1	4 13		18	2 27 E		10	0 66	
2	4 50		22	2 00		13	1 14	
5	3 67		23	1 74		17	0 74	
8	3 10		26	1 58		21	0 95	
11	3 29	3 31 W	30	0 96	1 40 E	25	0 85	
15	3 60	P = 1 40	Feb 2	0 27	P = 1 40	28	0 02	
18	3 12	L = 4 71 W	6	1 00	L = 0 00	31	0 95	
22	2 76 W		9	0 70 W		Aug 3	0 37 E	
25	2 45		11	0 60		6	0 42 W	
29	2 37		14	0 33 E		10	0 69	
Sept 1	3 57		17	0 11		14	0 44	
5	3 02		20	0 47 W		18	0 46 E	0 50 W
8	2 54		21	0 48		20	0 18 W	P = 1 40
12	2 87	2 72 W	24	0 22	0 31 W	24	0 28 E	L = 1 90 W
13	2 90	P = 1 40	28	0 43	P = 1 40	28	0 17 W	
16	2 01	L = 4 12 W	March 3	0 36	I = 1 71 W	31	0 04	
20	2 89 W					Sept 4	0 83	
						6	1 70	

ERROR OF LEVEL OF THE TRANSIT AXIS (Continued)

(All m at g P t West)

D	L—P	M	D	L—P	M	D	L—P	M
1843			1844			1844		
Sept 10	1 58 W		Adj ted th I t um t			Ag 17	2 13 E	
12	1 50		M h 7	0 10 E		20	2 13	2 32 E
15	0 57		9	0 72 W		24	1 85	P = 1 80
18	1 06		12	1 09		27	2 85	L = 0 52 E
21	1 35	0 86 W	16	0 88	0 67 W	31	4 19 E	
25	0 01	P = 1 40	19	0 43	P = 1 80	Sept 4	6 14	
26	0 68	L = 2 26 W	2	0 99	L = 2 47 W	5	4 44	
29	0 47 E		26	1 35 W		7	5 15	
Oct 2	0 93		30	1 19		10	5 82	
4	0 30		Ap l 2	1 06		13	3 97	
7	0 16		5	2 05		17	4 47	
11	0 67		9	1 02	1 42 W	20	4 89	
14	0 66		13	1 53	P = 1 80	24	5 63	5 13 E
17	0 42		16	1 75	L = 3 22 W	27	5 99	P = 1 80
21	0 13		19	2 55 W		30	5 76	L = 3 33 E
24	0 70	0 43 E	22	2 15		Adj ted th I t um t		
28	0 02 W	P = 1 40	25	2 97		Oct 4	8 41 E	
No 1	0 57 E	L = 0 97 W	28	1 16		9	9 46	
4	1 39 E		May 1	2 15		12	8 35	
7	0 3		4	2 30		16	9 85	
12	1 46	1 39 E	7	2 14	2 19 W	19	9 04	
14	1 85	P = 1 40	10	1 94	P = 1 80	22	9 26	
17	2 01	L = 0 01 W	13	2 40	L = 3 99 W	25	8 70	
20	0 90 E		16	1 45 W		27	8 30	
22	0 73	0 83 E	20	1 07	1 4 W	30	7 24	
25	0 81	P = 1 40	23	1 28	P = 1 80	Nov 2	7 84	
29	0 88	L = 0 57 W	27	1 90	L = 3 22 W	6	8 62	8 67 L
De 5	2 08 E		Adj t g fo A muth ppeas to ha e			9	8 86	P = 1 50
9	3 35		lte ed th Le l			13	8 89	L = 6 87 E
13	1 95	2 53 E	30	7 85 W		16	8 63 E	
16	2 96	P = 1 40	31	7 82		19	10 46 L	
19	2 30	L = 1 13 E	Adj sted fo L el			22	10 86	
23	1 39 E		Ju 31	0 90 E		25	10 28	
26	1 61		3	1 78		28	10 16	
29	1 11		6	0 85		30	10 68	
1844			9	1 45		Dec 3	10 87	
J 2	1 10		12	1 09		7	10 60	10 81 L
5	0 25		15	1 23		10	10 67	P = 1 80
7	1 18		18	0 99	1 32 E	16	12 70	L = 9 01 E
10	1 00		21	1 70	P = 1 80	H a y rain		
13	0 10 W		25	1 92	L = 0 48 W	20	15 55 E	
16	0 15 E		28	2 24 E		22	16 33	15 23 E
19	1 20		July 2	1 37		23	15 7	P = 1 80
22	1 63	1 04 L	5	1 52		30	14 40	L = 13 43 E
25	1 73	P = 1 80	8	2 54		1845		
29	1 33	L = 0 76 W	12	2 00		Jan 2	11 35 E	
Feb 2	0 83 E		15	1 93		Adj ted the I strumnt		
5	0 38	0 70 E	18	2 85		4	7 33 E	
9	0 80	P = 1 80	21	2 55		5	7 95	
12	0 80	L = 1 10 W	24	2 89		7	5 96	
15	1 05 E		27	1 72		11	6 88	
18	1 42		30	2 55		14	6 72	
21	1 99		Aug 3	2 70		16	8 43	
24	1 29		7	3 72		20	6 98	
27	1 18	1 29 E	10	2 57		24	6 99	
March 1	0 98	P = 1 80	13	2 07		28	6 35	
4	1 13	L = 0 51 W						

ERROR OF LEVEL OF THE TRANSIT AXIS (Contd)

(Illuminating P t W t)

D	L—P	M	D	L—P	M	D	L—P	M
1845			1845			1846		
J n 31	7 25 E	7 11 E	July 17	3 75 E		Jan 1	6 42 E	6 67 E
Feb 4	6 97	P = 1 80	21	4 73		4	7 21	P = 1 80
7	7 51	L = 5 31 E	24	4 54				L = 4 87 E
11	5 49 E		27	4 50		7	9 40 E	
13	5 24		30	3 76	4 19 E	10	9 55	
17	5 50		Aug 2	4 95	P = 1 80	13	8 70	
20	5 56		4	4 44	L = 2 39 E	16	9 19	
24	5 81			Adj ted the I st ument		19	9 70	
Ma 27	5 42		7	1 03 E		22	9 88	
2	4 52		8	0 92	0 73 E	26	9 55	
6	4 69		12	1 89	P = 1 80	29	9 11	
8	5 50		15	0 42 W	L = 1 07 W	F b 2	9 28	
11	5 99		17	3 41 E	2 58 E	5	8 47	
15	4 57		19	1 96	P = 1 80	9	8 9	
18	5 42	5 20 E	22	2 37	L = 0 78 E	12	8 96	
21	5 00	P = 1 80	25	1 80 E		15	8 28	
24	4 11	L = 3 40 E	28	1 13		18	7 85	
27	3 31 E		31	0 30		22	7 76	
30	2 62	3 28 E	Sept 4	0 01	0 97 E	25	7 69	8 83 E
April 2	3 25	P = 1 80	8	1 86	P = 1 80	28	8 69	P = 1 80
4	3 96	L = 1 48 E	11	0 73	L = 0 83 W	Ma 3	8 06	I = 7 03 E
7	5 61 E		13	2 37 E		6	6 03 E	
10	6 45		17	3 91		10	6 43	6 31 E
13	5 46		20	4 41		13	6 18	P = 1 80
17	4 17		23	3 89	3 47 E	17	6 61	L = 4 51 E
21	6 70		26	3 97	P = 1 80		Adjusted the Instrumet	
24	5 77		29	26	L = 1 67 L	20	3 90 E	
27	5 17		Oct 2	1 78 E		21	4 17	
30	6 06		6	1 78	1 47 E	24	5 14	
My 3	5 92		9	0 7	P = 1 80	27	4 24	
6	5 43		12	1 74	L = 0 33 W	30	6 50	
9	6 25		15	2 62 E		April 2	5 84	
12	6 37		18	1 80		6	5 27	
15	6 36		21	2 15		9	5 10	
17	5 49		24	1 44		13	5 11	
21	6 38	5 82 E	27	2 36		16	5 05	
24	5 91	P = 1 80	31	2 96	2 42 E	20	5 10	
27	5 48	L = 4 02 E	No 3	3 17	P = 1 80	23	4 02	4 87 E
	Adj ted the I t net		6	2 91	L = 0 62 E	26	4 55	P = 1 80
29	1 8 E		10	2 40		29	4 85	I = 3 07 E
30	2 99		14	3 37 E			Adjust d the Instrumet	
June 2	1 80		17	4 03		My 2	6 56 L	
4	1 59		20	3 85		5	4 95	5 48 E
7	1 25	1 72 E	24	5 45		8	5 57	P = 1 80
10	1 26	P = 1 80	27	5 04	4 25 E	11	4 83	I = 3 68 F
13	1 33	L = 0 08 W	Dcc 1	4 50	P = 1 80		Inverted the Ax1 several times	
	Adj ted the I trument		4	3 52	L = 2 45 E	14	2 46 E	
16	2 88 E			He y ain		18	1 01	
19	3 07		8	5 78 E		21	2 71	
23	4 11		11	6 81		25	2 00	
27	4 86		18	6 79		27	2 80	
30	4 34		17	6 54		30	1 88	
July 4	4 98		20	6 25		June 2	1 39	
7	3 74		23	6 74		5	2 37	
11	4 10		28	7 55		9	1 25	
14	4 46					12	1 96	

ERROR OF COLLIMATION OF THE TRANSIT AXIS (*C u n e d*)

D		R C		RLMARKS	D		R C		RLMARI S
	L	C +L	C			L	C +L	C	
1838					1838				
June 2	— 1 09	— 9 88	— 8 79		No 14	I d d th C l l m t r r			By inver C = 2 63
5	2 31	9 88	7 57		20	+ 4 90	+ 9 71	+ 4 81	
8	1 39	9 71	8 32		23	4 13	8 98	4 85	
11	1 54	9 46	7 92		29	4 82	8 06	3 24	
14	1 11	9 55	8 44		Dec 3	3 45	6 42	2 97	
17	1 13	9 71	8 58		6	3 60	6 43	2 83	
20	0 91	9 88	8 97		9	3 55	6 29	2 74	
23	1 22	10 72	9 50		12	4 35	8 72	4 37	
26	0 90	10 21	9 31	Mean = — 8 64	18	4 10	6 34	2 24	
29	0 77	7 25	6 48		1	3 75	8 19	4 44	
July 2	0 38	7 25	6 87		18	3 40	7 44	4 04	
5	0 48	7 08	6 60		21	3 82	7 37	3 55	
11	0 42	7 74	7 32		24	3 23	6 67	3 44	
14	0 40	7 00	6 60		27	2 58	6 59	4 01	
17	1 10	9 2	8 12		31	2 10	6 26	4 16	Me n = + 3 69
23	2 16	8 23	6 07		1839				
26	1 55	8 39	6 84		Ja 2	2 10	7 16	5 06	
29	0 65	7 58	6 93		5	2 80	7 09	4 29	
Au 1	0 90	7 08	6 18		8				By n er C = 1 29
9	1 51	7 74	6 23		11	3 30	6 59	3 29	
11	1 39	7 91	6 5		14	2 45	6 67	4 22	
14	0 46	7 74	7 28		17	2 95	6 34	3 39	
17	0 15	7 58	7 43		20	3 25	6 59	3 34	
20	0 25	7 91	7 66	By er C = 7 24	23	1 58	4 61	3 03	
23	0 35	7 91	7 56		26	1 65	5 59	3 94	
26	0 20	7 74	7 54		29	1 15	4 61	3 46	
29	1 33	8 72	7 39		F b 1	2 07	7 08	5 01	
S pt 1	1 30	8 72	7 42		4	2 50	7 41	4 91	
4	1 35	8 89	7 54		7	1 75	6 59	4 84	
7	2 15	8 23	6 08	Me = — 7 06	11	1 82	5 59	3 77	
8	2 05	10 04	7 99	By e C = 7 41	17	1 40	6 09	4 69	
11	3 17	10 98	7 81		21	2 85	6 12	3 27	
	I d j t d th I tr t d p				25	1 70	6 26	4 56	
14	— 0 17	+ 5 43	+ 5 60		28	2 10	6 09	3 39	
15	— 0 90	5 43	6 33		M ch 3	1 53	6 26	4 73	Mean = + 4 10
17	— 0 44	5 80	6 24		6	1 25	6 17	4 92	
21	— 0 04	6 09	6 13		9	1 15	6 09	4 94	
24	+ 0 50	6 55	6 05		12	1 20	5 92	4 72	
27	+ 0 84	6 96	6 12		15	0 95	6 26	5 31	
30	— 0 26	5 92	6 18		18	1 35	6 12	4 77	
Oct 1	— 0 81	6 17	6 98		22	1 10	6 26	5 16	
4	— 0 48	6 59	7 07		25	1 20	5 92	4 72	
5	— 0 15	6 15	6 30		28	1 45	5 76	4 31	
8	— 0 25	6 92	7 17	Me n = + 6 38	29	— 0 85	2 14	2 99	
12	— 0 30			By m r on C =	Apr l 1	+ 5 32	8 23	2 91	
14	Γ nd all tl w b k p t				4	5 25	8 72	3 47	
17	+ 1 37	+ 13 01	+ 11 64	By C = + 12 33	8	5 00	9 05	4 05	
20	1 15	13 51	12 36		11	5 32	8 72	3 40	
23	1 00	13 82	12 82		14	4 07	8 89	4 82	
26	1 25	13 98	12 73		17	4 70	8 72	4 02	
29	2 21	16 00	13 79		20	4 82	8 56	3 74	
Nov 1	2 40	16 05	13 65		23	5 45	9 38	3 93	
5	3 57	15 94	12 37		26	3 85	6 75	2 90	
8	4 20	15 81	11 61	Mean = + 12 63	29	4 50	7 91	3 41	
					M y 2	4 10	6 43	2 33	
						3 03	6 26	3 23	

ERROR OF COLLIMATION OF THE TRANSIT AXIS (Continued)

D		R C		REMARKS	D		R C		REMARKS
	L	C + L	C			L	C + L	C	
1839					1839				
My 6	+ 1 95	+ 6 00	+ 4 05		Sept 14	+ 8 65	+ 11 53	2 88	Mean = + 2 80
9	— 0 66	3 95	4 61		17	8 45	11 19	2 74	
13	+ 1 39	6 09	4 70		20	8 13	11 03	2 90	By inver C = + 2 30
20	2 65	5 10	2 45		Oct 5	5 52	8 89	3 37	
29	2 60	7 25	4 65		8	5 0	6 92	1 7	
June 1	3 05	7 44	4 39		17	5 55	10 21	4 66	
4	3 07	7 44	4 37		Nov 11	12 70	13 18	0 48	
10	2 13	6 75	4 62		19	8 37	12 85	4 48	
25	3 85	6 92	3 07	Mean = + 1 03	25	7 22	11 03	3 81	
J ly 4				By ve C = + 4 14	Dec 2	6 15	11 85	5 70	
26	4 78	7 41	2 63		9	4 44	10 54	6 10	
29	5 96	8 39	2 43		16	5 10	10 54	5 44	
Aug 1	6 50	9 22	2 72		23	6 15	10 37	4 22	
8	6 15	10 37	4 22		30	5 20	9 46	4 6	
11	7 75	10 87	3 12		1840				
14	6 45	8 89	2 44		Jan 6	6 22	10 54	4 32	
Sept 5	6 55	8 72	2 17		14	6 50	10 37	3 87	
11	8 50	11 03	2 53		27	6 85	11 53	4 68	Mean = + 4 08

Tl mtt d t l t l M

From 27th January 1840 to end of the year 1847 C = 0 00

AZIMUTH ERROR

COMMENCING with 17th January 1837 the centre wire was adjusted to a Mark which had only roughly been estimated to represent the meridian the comparison of observations above and below the Pole showed that the Mark thus assumed was situated 2 58 to the West of the Meridian On the 20th February 1840 the meridian mark having become somewhat obscured by the action of wind and weather I directed it to be removed and a new mark to be painted on the same place exactly on the meridian or 2 6 to the Eastward of that hitherto in use by some mistake however on the part of the Assistant to whom I had entrusted this alteration the new mark was found to be situated 4 0 to the Eastward of the meridian hence for 17th January 1837 to the 20th February 1840 the corrections due to an Azimuth error of 2 58 W have been employed and for the observations subsequent to that period in a general way corrections due to an Azimuth of 4 E have been allowed save in a few cases where from observation of *δ* or *Ursa Minoris* a slight modification of this amount has been considered justifiable the limits however have been between 2 5 E and 5 2 East

The latter was effected few days before my departure from India England (fulgh) but the latter having been delayed the latter was taken care of till my return to India 1842

Referring to the Errors of Collimation as already given and recollecting that the errors of Azimuth (A) = $C + 2.58$ for the period January 1 1838 to February 20 1840 and that since that period (C having been made = 0) $A = + 4.0$ we get altogether as follows—

				C	A	Remarks
1838						
January	1	to March	5 —	10 85 +	8 27	
March	6 —	April	10 —	13 50 +	10 92	
April	11 —	—	23 —	11 23 +	8 65	Put in a new set of wires
April	24 —	June	26 —	8 64 +	6 06	
June	27 —	September	11 —	7 06 +	4 48	} I found it convenient to alter the Collimation error
September	12 —	October	8 +	6 38 —	8 96	
October	16 —	November	8 +	12 63 —	15 21	Put in a new set of wires
November	10 —	December	31 +	3 69 —	6 27	I had reduced the Collimation error
1839						
January	1 —	February	28 +	4 10 +	6 68	
March	1 —	June	2 +	4 03 +	6 61	
June	26 —	September	20 +	2 80 +	5 38	
1839 1840						
September	21 —	January	27 +	4 08 +	6 66	
1840						
January	28 —	February	20	0 00 +	2 58	} During this period the adjustment for Collimation has been made whenever necessary
1840		1847				
February	20 —	December	31	0 00 +	4 00	

CLOCK ERRORS AND RATES

In the computation of Clock Errors the places of Stars as given in Vol VI had invariably been employed down to the end of the year 1842 but—commencing with the year 1843 I have employed the apparent places as taken from the Nautical Almanacs except in a few instances in which the Nautical Almanac mean places have differed to the amount of one tenth of a second of time from the Madras Catalogue in which case the Stars so differing have been considered ineligible for the determination of Clock Errors. The Transit Clock during the period embraced by these observations has it will be seen generally speaking gone well but in the few cases in which irregularities have occurred the practice observed—of not trusting it for a period of more than two or three hours has gone far to render its irregularities unimportant. The two transit observers each differed from one another and myself in the estimation of the time at which a Star transits the largest amount for Equatorial Stars not exceeding four tenths of a second of time. I have reason however to believe that these amounts—personal equations—are not invariable and that the allowance which would be proper in the case of equatorial Stars would not apply to Stars situated near to the Pole. I am not at present prepared with a good series of observations to substantiate this opinion but nevertheless feel considerable confidence in stating such to be the fact.

Admitted further to determine the position of the stars which might be due to an error in the position of the instrument.

DAILY RATE OF THE TRANSIT CLOCK

1838	s		1838	s		1838	s		1838	s	
Jan 4	— 0 47		Mar 10	— 0 49		May 20	+ 1 04		Aug 2	+ 1 75	
5	+ 0 25		11	— 0 61		21	+ 1 21		3	+ 1 95	
6	+ 0 8		12	— 0 54		22	+ 1 14		4	+ 1 44	
7	+ 0 72		13	— 0 88		23	+ 1 29		8	+ 1 80	
8	+ 1 05		14	— 0 69		24	+ 0 95		9	+ 1 87	
9	+ 1 38		15	— 0 93		25	+ 0 90		10	+ 1 77	
10	+ 1 46		16	— 0 51		26	+ 1 12		14	+ 1 87	
11	+ 1 61		17	— 0 85		27	+ 0 94		15	+ 1 80	
12	+ 1 28		18	— 0 85		28	+ 1 21		16	+ 1 62	
13	+ 1 26		19	— 0 89		31	+ 1 19		20	+ 1 86	
14	+ 1 31		20	— 1 39		June 1	+ 1 30		28	+ 1 49	
15	+ 1 79		21	— 1 55		2	+ 1 33		29	Put back one min	
16	+ 1 70		22	— 0 39		3	+ 1 06		30	+ 1 20	
17	+ 1 75		23	— 0 81		8	+ 0 99		31	+ 1 26	
18	Stopt 1 w nd 1 g		24	— 0 81		9	+ 1 31		Sept 1	+ 1 31	
19	+ 2 01		25	— 0 36		10	+ 1 12		2	+ 1 41	
20	+ 1 69		26	— 0 48		12	+ 1 24		3	+ 1 39	
21	+ 1 58		27	— 0 41		13	+ 1 11		4	+ 1 18	
22	+ 1 70		28	— 0 40		14	+ 1 33		5	+ 1 45	
23	+ 1 92		29	— 0 65		15	+ 1 06		6	+ 1 13	
24	+ 1 46		30	— 0 42		16	+ 1 12		7	+ 1 41	
26	— 0 05		31	— 1 40		18	+ 0 99		8	+ 1 48	
27	+ 0 05		April 1	— 1 26		19	+ 1 31		9	+ 1 60	
28	+ 0 24		2	— 1 33		20	+ 0 90		11	+ 1 60	
29	+ 0 27		3	— 1 19		21	+ 1 41		12	+ 1 33	
30	+ 0 59		4	— 1 02		22	+ 1 36		13	+ 1 12	
31	+ 0 83		5	— 1 14		23	+ 1 42		18	+ 1 46	
Feb 1	— 0 40		6	— 1 08		24	+ 1 27		19	+ 1 50	
2	— 1 97		7	— 1 18		25	+ 1 50		25	+ 1 73	
3	— 0 12		8	— 0 96		26	+ 1 57		26	+ 1 38	
4	T pt 1 w nd 1 g		9	— 1 08		27	+ 1 72		27	+ 1 39	
5	— 0 52		10	— 0 84		28	+ 1 24		28	+ 1 45	
6	+ 0 90		11	— 1 34		July 2	+ 1 48		29	+ 1 36	
7	+ 0 44		12	— 1 26		3	+ 1 11		30	+ 1 32	
8	+ 0 15		13	— 1 18		4	+ 1 41		Oct 1	+ 1 55	
9	+ 0 20		15	— 1 23		5	+ 1 26		2	+ 1 71	
10	+ 0 29		16	— 1 04		6	+ 1 52		3	+ 1 44	
11	+ 0 26		17	— 1 12		7	+ 1 22		4	+ 1 60	
12	— 0 33		18	— 0 91		8	+ 1 33		7	+ 1 68	
13	— 0 28		19	— 0 86		9	+ 1 29		9	+ 1 66	
14	— 0 37		20	— 0 67		10	+ 1 45		10	+ 1 40	
15	— 0 37		21	— 0 67		11	+ 1 5		11	+ 1 39	
16	— 0 35		23	— 0 83		12	+ 1 32		12	+ 1 56	
18	+ 0 56		24	— 0 82		13	+ 1 44		13	+ 1 64	
19	+ 0 70		26	— 0 88		14	+ 1 52		20	+ 1 52	
20	+ 0 71		27	— 0 77		15	+ 1 11		22	+ 1 64	
21	Stopt four seconds		28	— 0 94		16	+ 1 50		23	+ 1 95	
24	— 0 68		29	Cleaned the Clock		17	+ 1 24		24	+ 1 68	
25	— 0 60		May 6	+ 1 16		18	+ 1 22		25	+ 1 97	
26	— 2 00		7	+ 1 16		20	+ 1 31		26	+ 2 17	
27	— 2 78		9	+ 1 06		21	Put back one min		Nov 1	+ 2 04	
28	Cl aned the Clock		10	+ 1 14		23	+ 1 33		2	+ 1 96	
Mar 3	— 1 72		11	+ 1 11		24	+ 1 90		3	+ 1 71	
4	— 1 16		12	+ 0 81		25	+ 1 70		14	+ 1 89	
5	— 1 25		13	+ 0 93		26	+ 1 73		16	Put back one min	
6	— 0 87		14	+ 1 16		27	+ 1 70		18	+ 2 10	
7	— 0 80		15	+ 0 85		28	+ 1 85		19	+ 2 09	
8	— 0 70		17	+ 1 00		29	+ 1 43		21	+ 2 20	
9	— 0 61		18	+ 1 15		31	+ 1 86		22	+ 2 26	
			19	+ 1 19		Aug 1	+ 1 72		23	+ 2 01	

DAILY RATE OF THE TRANSIT CLOCK (*Continued*)

1838			1839			1839			1839		
No		s	F b			April		s	July		
24		+ 2 03	14	+ 2 29		17	+ 0 84		6	+ 0 10	
27		+ 1 95	15	+ 2 25		18	+ 0 76		10	— 0 10	
Dec 1		+ 1 95	16	+ 2 27		19	+ 0 80		11	— 0 10	
2		+ 2 12	17	+ 2 09		20	Stopt 4 in v indg		13	— 0 10	
9		+ 1 87	18	Put b cl one mi		23	+ 0 70		14	For ded one min	
10		+ 1 90	19	+ 2 04		25	+ 0 75		16	+ 0 40	
11		+ 1 62	20	+ 2 26		26	+ 0 90		17	+ 0 20	
12		+ 1 86	21	+ 2 33		27	+ 0 46		18	+ 0 30	
13		+ 1 73	22	Stopt n wind		28	+ 0 62		20	+ 0 20	
14		+ 1 93	23	+ 2 94		29	+ 0 71		22	+ 0 10	
15	Put b ck one m n		24	+ 2 81		30	+ 0 60		23	+ 0 15	
16		+ 1 95	25	+ 2 66		May 1	+ 0 50		24	+ 0 30	
17		+ 1 85	26	+ 2 47		2	+ 0 56		25	— 0 10	
18		+ 2 06	27	+ 2 67		3	+ 0 77		26	+ 0 20	
19		+ 1 97	28	+ 2 69		4	+ 0 94		27	— 0 10	
20		+ 2 44	Mar 1	+ 2 69		6	+ 1 22		28	+ 0 20	
21		+ 2 17	2	+ 2 56		7	+ 1 10		29	— 0 10	
22		+ 2 13	3	+ 2 47		8	+ 0 60		30	+ 0 07	
23		+ 2 21	4	+ 2 70		9	+ 0 72		31	+ 0 08	
24	Stopt 10 in wi dg		5	+ 3 04		10	+ 0 53		Aug 2	— 0 10	
25		+ 2 20	6	+ 3 47		11	+ 1 16		3	+ 0 30	
26		+ 2 00	7	+ 2 94		12	+ 0 63		5	+ 0 20	
28		+ 2 28	8	+ 2 65		13	+ 0 70		6	+ 0 30	
29		+ 2 33	9	+ 2 63		14	+ 0 94		7	+ 0 01	
31		+ 2 30	10	+ 2 61		15	+ 1 08		8	+ 0 30	
1839			11	R g l ted th Cl k		16	+ 0 86		11	+ 0 50	
Jan 3		+ 2 36	12	+ 0 79		17	+ 1 00		12	+ 0 40	
4		+ 2 34	13	+ 0 94		18	Stopt 15 i windg		14	+ 0 20	
5		+ 2 34	14	+ 1 17		20	+ 0 90		17	+ 0 30	
6		+ 2 16	15	+ 1 15		21	+ 0 54		22	+ 0 40	
7		+ 2 57	16	+ 1 37		22	+ 0 10		27	+ 0 30	
8		+ 1 95	17	+ 1 03		23	0 00		29	+ 0 30	
10		+ 2 28	18	+ 1 12		24	+ 0 10		Sept 2	+ 0 20	
11		+ 1 82	19	+ 1 00		25	— 0 06		3	+ 0 05	
13		+ 2 16	20	+ 1 00		30	+ 0 30		5	+ 0 30	
15		+ 2 21	22	+ 0 77		31	+ 0 10		6	+ 0 40	
16		+ 2 45	23	+ 0 51		June 1	+ 0 10		7	+ 0 20	
17		+ 2 85	24	+ 0 73		4	0 00		21	+ 0 20	
18		+ 2 33	25	+ 0 81		7	— 0 10		22	+ 0 30	
19	Put back one min		26	+ 0 85		8	— 0 20		23	— 0 01	
20		+ 2 17	27	+ 0 77		9	0 00		24	+ 0 09	
21		+ 2 46	28	+ 0 72		11	+ 0 10		25	+ 0 20	
22		+ 2 00	29	+ 0 78		12	+ 0 10		26	— 0 10	
23	Stop 15 in w ndg		30	+ 0 78		13	+ 0 20		27	+ 0 20	
27		+ 2 30	31	+ 0 86		14	+ 0 10		28	+ 0 30	
28		+ 2 16	April 1	+ 0 82		15	+ 0 30		29	— 0 30	
29		+ 2 12	2	+ 0 80		16	+ 0 10		30	+ 0 20	
30		+ 1 91	3	+ 0 61		17	Stopt 10 in windg		Oct 1	+ 0 02	
31		+ 1 99	4	+ 0 41		19	— 0 15		2	+ 0 30	
Feb 1		+ 2 20	5	+ 0 88		21	— 0 05		3	+ 0 20	
2		+ 2 10	6	+ 0 65		22	+ 0 10		4	+ 0 30	
3		+ 2 00	7	+ 0 72		24	+ 0 14		5	+ 0 12	
4		+ 2 25	8	+ 0 85		26	— 0 06		6	+ 0 32	
5		+ 2 00	9	+ 0 60		27	+ 0 10		7	+ 0 31	
6		+ 2 00	11	+ 0 79		28	+ 0 10		8	+ 0 30	
10		+ 2 03	13	+ 0 80		29	— 0 30		9	+ 0 40	
11		+ 1 98	14	+ 0 83		30	— 0 10		10	Stopt 2 in winding	
12		+ 2 15	15	+ 0 83		July 4	— 0 28		12	+ 0 24	
13		+ 2 17	16	+ 0 82		5	+ 0 03		13	+ 0 21	
									15	— 0 07	

DAILY RATE OF THE TRANSIT CLOCK (Continued)

1839	s		1840			1840			1840	s	
Oct 16	0 00		J n 14	+ 0 52		M 16	+ 0 41		May 30	+ 0 74	
17	+ 0 28		15	+ 0 37		17	+ 0 48		31	+ 0 70	
18	+ 0 58		16	+ 0 59		18	+ 0 25		J n e 2	+ 0 80	
19	+ 0 40		17	+ 0 65		19	+ 0 54		3	+ 0 78	
21	+ 0 27		18	+ 0 60		20	+ 0 38		4	+ 0 67	
22	+ 0 20		19	+ 0 72		21	+ 0 47			+ 0 72	
23	+ 0 27		20	+ 0 73		22	+ 0 22		6	+ 0 73	
24	+ 0 40		21	+ 0 66		23	+ 0 22		7	+ 0 74	
25	+ 0 40		22	+ 0 73		24	+ 0 31		8	+ 0 86	
26	+ 0 38		23	+ 0 82		25	+ 0 50		9	+ 0 70	
27	+ 0 29		24	+ 0 79		26	+ 0 33		10	+ 0 48	
28	+ 0 60		25	+ 0 75		27	+ 0 64		11	+ 0 44	
29	+ 0 36		26	+ 1 18		28	+ 0 41		16	+ 1 12	
No 15	+ 0 70		27	+ 1 01		29	+ 0 51		17	+ 0 73	
16	+ 0 63		28	+ 0 80		30	+ 0 53		18	+ 0 30	
18	+ 0 67		29	+ 0 76		31	+ 0 21		20	+ 0 70	
19	+ 0 21		30	+ 0 89		A l 1 1	Clock topt n windg		22	+ 0 69	
20	+ 0 33		31	+ 0 89		2	+ 0 32		23	+ 0 6	
22	+ 0 58		Γ b 1	+ 1 02		3	+ 0 29		24	+ 0 27	
23	+ 0 50		2	+ 0 87		4	+ 0 54		25	+ 0 61	
24	+ 0 60		3	+ 0 82		5	+ 0 52		26	Put backward 1 min	
25	+ 0 98		4	Clock 1	i w l i g	6	+ 0 33		27	+ 1 05	
26	+ 0 60		5	+ 0 85		7	+ 0 78		28	+ 0 92	
27	+ 0 53		6	+ 0 88		8	+ 0 67		30	+ 0 85	
28	+ 0 82		7	+ 1 00		9	+ 0 78		July 2	+ 1 03	
29	+ 0 74		8	+ 0 74		10	+ 1 00		3	+ 0 90	
30	+ 0 95		9	+ 0 68		11	+ 0 95		4	+ 1 00	
Dec 2	+ 0 90		10	+ 0 60		13	+ 0 81		6	+ 0 90	
3	+ 0 60		11	+ 0 94		14	+ 0 94		8	+ 1 10	
4	+ 0 59		12	+ 0 93		15	+ 0 99		14	+ 0 80	
8	+ 0 42		13	+ 0 72		16	+ 0 80		16	+ 0 79	
9	+ 0 18		14	+ 1 29		17	+ 0 72		17	+ 0 74	
10	+ 0 68		15	+ 1 03		18	+ 0 60		18	+ 0 74	
12	+ 0 50		16	+ 0 90		19	+ 0 48		21	+ 1 00	
13	+ 0 31		17	+ 0 97		20	+ 0 56		22	Stopt in winding	
14	+ 0 20		18	+ 0 97		21	+ 0 68		24	+ 0 66	
16	+ 0 10		19	+ 1 15		23	+ 0 52		26	+ 0 65	
17	+ 0 20		20	+ 0 97		24	+ 0 44		27	+ 0 52	
18	+ 0 30		21	+ 1 11		25	+ 0 56		28	+ 0 57	
19	+ 0 40		22	+ 1 12		26	+ 0 32		29	+ 0 72	
20	+ 0 22		23	+ 1 53		30	Stopt in w i d i n		30	+ 0 75	
21	+ 0 02		24	+ 1 03		May 2	+ 0 30		31	+ 0 75	
23	+ 0 30		25	+ 0 93		4	+ 0 50		Aug 1	+ 0 70	
24	+ 0 36		26	+ 0 99		5	+ 0 50		5	+ 0 99	
25	+ 0 30		27	+ 0 91		7	+ 0 50		7	+ 1 09	
26	+ 0 20		28	+ 0 90		9	+ 0 60		10	+ 1 16	
27	+ 0 22		29	+ 0 74		13	+ 0 50		15	+ 1 49	
28	+ 0 31		Mar 1	+ 0 76		15	+ 0 50		19	+ 1 39	
29	+ 0 15		2	+ 0 89		16	+ 0 41		20	St pt 1 i w l g	
30	+ 0 55		3	Stopt i w i d n g		18	+ 0 38		21	+ 0 72	
31	+ 0 11		4	+ 0 44		19	+ 0 80		22	+ 0 83	
1840			6	+ 0 32		20	+ 0 50		23	+ 0 68	
Jan 2	+ 0 63		7	+ 0 22		21	+ 0 60		24	+ 1 08	
3	+ 0 34		8	+ 0 30		22	+ 0 70		25	+ 0 93	
4	+ 0 07		9	+ 0 25		23	+ 0 69		26	+ 1 25	
5	St pt 1	Indg	10	+ 0 22		24	+ 0 44		27	+ 0 80	
7	+ 0 49		11	+ 0 64		25	+ 0 80		28	+ 1 00	
8	+ 0 75		12	+ 0 34		26	+ 0 87		29	+ 1 06	
9	+ 0 64		13	+ 0 63		27	+ 0 70		31	+ 1 15	
11	+ 0 59		15	+ 0 42		29	+ 0 73				

DAILY RATE OF THE TRANSIT CLOCK (Contd)

1840	s		1840		1841	s		1841	s			
Sept 5	+ 1 25		Dec 22	+ 0 47	Ap il 5	+ 0 43		Aug 27	+ 1 00			
6	+ 1 41		23	+ 0 39	6	+ 0 46		28	+ 0 54			
7	+ 1 56		24	+ 0 20	7	+ 0 45		29	+ 0 75			
8	+ 1 27		25	+ 0 60	8	+ 0 47		30	+ 0 83			
12	+ 1 28		27	+ 0 60	14	+ 0 26		31	+ 0 84			
14	+ 1 37		28	+ 0 50	15	+ 0 31		Sept 3	+ 0 91			
15	+ 1 31		1841		16	+ 0 14		4	+ 0 88			
16	+ 1 37		Jan 3	+ 0 38	18	+ 0 25		6	+ 0 64			
17	+ 1 47		5	+ 0 33	19	+ 0 41		7	+ 0 79			
18	St pt 1	w lg	6	+ 0 44	20	+ 0 35		9	+ 0 35			
22	+ 0 99		7	St pt w iding	21	+ 0 42		10	+ 0 50			
24	+ 0 72		10	+ 0 73	22	+ 0 43		14	+ 0 49			
26	+ 0 77		11	+ 0 58	23	+ 0 55		16	+ 0 75			
27	+ 0 65		15	+ 1 03	24	+ 0 43		17	+ 0 75			
28	+ 0 89		16	+ 1 08	26	+ 0 38		23	+ 1 00			
29	+ 0 58		17	+ 1 16	27	+ 0 13		24	+ 0 97			
30	+ 0 73		20	+ 1 16	28	+ 0 22		25	+ 0 45			
Oct 1	+ 0 62		21	+ 1 07	M y 6	+ 0 14		27	+ 0 71			
2	+ 0 52		22	+ 1 15	8	+ 0 26		28	+ 0 73			
3	+ 0 46		23	+ 1 07	10	+ 0 13		29	+ 0 60			
4	+ 0 44		24	+ 1 05	11	+ 0 40		Oct 1	+ 0 70			
5	+ 0 50		25	+ 0 97	12	+ 0 47		2	+ 0 84			
7	+ 0 73		26	+ 1 15	14	+ 0 28		7	+ 0 94			
8	+ 0 76		28	+ 1 04	18	+ 0 47		8	+ 0 85			
9	+ 1 02		29	+ 1 00	19	+ 0 70		16	+ 1 41			
10	+ 0 67		Feb 1	+ 0 99	20	+ 0 47		17	+ 1 83			
12	+ 0 93		2	+ 1 00	21	+ 0 67		19	+ 1 80			
13	+ 0 83		3	+ 1 03	24	+ 0 35		21	+ 1 30			
16	+ 0 79		5	+ 0 76	25	+ 0 23		26	+ 1 70			
17	+ 0 93		6	+ 0 54	26	+ 0 34		27	+ 1 10			
18	+ 0 74		7	+ 0 71	27	+ 0 22		No 4	+ 1 17			
19	+ 1 08		8	+ 1 16	29	+ 0 16		5	+ 1 69			
20	+ 1 03		9	+ 0 87	30	+ 0 29		12	+ 0 93			
21	+ 0 94		10	+ 0 76	31	+ 0 40		13	+ 0 75			
22	+ 1 10		11	+ 0 90	June 2	+ 0 32		14	+ 1 11			
23	+ 0 90		12	+ 0 81	3	+ 0 22		16	+ 1 17			
24	+ 0 86		13	+ 1 00	4	+ 0 50		17	+ 0 87			
30	+ 0 90		17	+ 0 52	5	+ 0 48		19	+ 0 53			
31	+ 0 76		19	+ 0 80	7	+ 0 81		20	+ 0 15			
Nov 1	+ 0 87		20	+ 0 67	9	+ 0 97		22	— 0 51			
2	+ 0 69		23	+ 0 97	11	+ 0 88		23	— 0 46			
4	+ 0 77		24	+ 1 17	12	+ 1 24		24	— 0 60			
20	+ 0 64		25	+ 0 93	16	+ 1 92		27	— 0 56			
21	+ 0 70		26	+ 0 73	17	+ 2 70		Dec 3	— 0 20			
23	+ 0 24		27	+ 1 01	The Clock was taken down by Mr Or with ev to e medy g ts te de cy to stop whltbei gwou d p the Ob-er to during th inter l were taken w th a Box Cl o nometer by De t					5	— 0 10	
24	+ 0 31		28	+ 0 79						7	— 0 20	
29	+ 0 41		Ma 3	+ 0 80						10	+ 0 30	
30	+ 0 42		4	Stopt n wmd ng						11	+ 0 34	
Dec 3	+ 0 50		5	+ 1 09						14	+ 0 63	
4	+ 0 57		6	+ 0 92						15	+ 0 60	
6	+ 0 41		8	+ 0 81						17	+ 0 60	
11	+ 0 60		9	+ 0 73						18	+ 0 50	
12	+ 0 31		10	+ 0 61						20	+ 0 44	
13	+ 0 63		11	+ 0 91						21	+ 0 34	
14	+ 0 35		12	+ 0 92	Aug 4	+ 0 41		26	+ 0 70			
1	+ 0 42		13	+ 0 89	6	+ 0 48		27	+ 0 60			
16	+ 0 71		16	+ 0 76	7	— 0 17		1842				
17	+ 0 76		17	+ 1 00	11	— 0 04		Jan 3	+ 1 00			
18	+ 0 73		Ap l 3	+ 0 02	16	— 0 20		5	+ 0 51			
19	+ 0 64		4	+ 0 32	18	+ 0 51		6	+ 0 70			
					19	+ 0 55		7	+ 0 67			
					21	+ 0 67						
					24	+ 0 75						

DAILY RATE OF THE TRANSIT CLOCK (Continued)

1842			1842	s		1842	s		1842	s	
Jan 8	+ 0 81		Apr 10	+ 0 15		July 6	+ 2 69		Oct 2	+ 2 82	
10	+ 0 64		11	+ 0 40		7	+ 2 45		3	+ 2 91	
13	+ 0 86		12	+ 0 41		9	+ 2 57		4	+ 2 85	
14	+ 1 10		13	+ 0 21		10	+ 2 36		5	+ 2 74	
15	+ 1 18		14	+ 0 48		11	+ 2 14		6	+ 2 39	
17	+ 1 08		15	+ 0 39		12	+ 2 17		7	+ 2 51	
18	+ 1 14		17	+ 0 64		13	+ 2 37		8	+ 2 67	
19	+ 0 81		19	+ 0 36		14	+ 2 41		9	+ 2 41	
20	+ 0 62		20	+ 0 44		15	+ 2 37		10	+ 2 79	
22	+ 1 01		21	+ 0 42		16	+ 2 63		11	+ 2 83	
27	+ 1 07		22	+ 0 70		20	+ 2 51		12	+ 2 45	
28	+ 0 41		26	+ 0 58		21	+ 2 61		13	+ 2 55	
29	+ 0 70		27	+ 0 88		22	+ 2 17		14	+ 2 61	
31	+ 0 71		28	+ 0 73		23	+ 2 46		15	Put back two min	
Feb 1	+ 0 43		29	+ 0 80		24	+ 2 28		16	+ 2 97	
4	+ 0 67		30	+ 1 15		25	Stopt in winding		17	+ 2 56	
5	+ 0 41		My 1	+ 0 97		26	+ 2 15		18	+ 2 70	
7	+ 0 42		2	+ 0 71		27	+ 1 88		19	+ 2 41	
8	+ 0 65		3	+ 0 38		28	+ 1 88		20	+ 2 42	
9	+ 0 68		4	+ 0 57		29	+ 1 90		21	+ 2 58	
10	+ 0 60		8	+ 1 46		Aug 1	+ 2 13		22	+ 2 68	
11	+ 0 69		9	+ 1 64		2	+ 1 43		26	+ 3 64	
14	+ 0 68		10	+ 1 27		4	+ 2 15		27	+ 3 42	
15	+ 0 72		11	+ 0 81		6	+ 2 48		28	+ 3 58	
16	+ 0 73		12	+ 1 64		7	+ 2 65		29	+ 3 04	
17	+ 0 37		13	+ 1 14		8	+ 2 87		30	+ 3 42	
18	+ 0 44		14	+ 0 90		9	+ 2 53		Nov 1	+ 3 70	
19	+ 0 28		16	+ 1 71		10	+ 2 49		2	+ 3 75	
21	+ 0 30		17	+ 1 27		11	+ 2 33		3	+ 3 83	
22	+ 0 40		18	+ 1 61		12	+ 1 91		4	+ 3 58	
23	+ 0 03		19	+ 1 28		13	+ 1 48		I regulat d the Clock		
24	+ 0 33		20	+ 1 61		14	+ 1 19		13	— 2 48	
25	+ 0 39		22	+ 1 72		15	+ 1 52		15	— 1 87	
26	+ 0 13		23	+ 1 63		16	+ 1 16		17	— 2 08	
28	+ 0 18		24	+ 1 62		21	Put back one min		18	— 1 93	
Mar 2	+ 0 17		2	+ 1 84		26	+ 1 02		19	— 2 09	
3	+ 0 12		26	+ 1 52		31	+ 1 38		20	— 1 73	
4	+ 0 56		27	+ 1 68		Sept 1	+ 0 80		21	— 1 93	
5	+ 0 31		28	+ 1 41		3	+ 0 68		22	— 1 82	
7	+ 0 29		30	+ 1 60		4	+ 1 18		23	— 1 52	
9	+ 0 31		June 1	+ 1 42		7	+ 1 57		26	— 1 85	
10	+ 0 54		4	+ 1 37		8	+ 1 71		27	— 1 32	
15	+ 0 38		6	+ 1 42		9	+ 1 87		29	— 1 85	
16	+ 0 41		8	+ 1 61		10	+ 1 85		30	— 1 62	
17	+ 0 41		9	+ 1 69		11	+ 2 22		Dec 2	— 1 70	
18	+ 0 35		10	+ 1 47		12	+ 2 32		3	— 1 42	
19	+ 0 75		11	+ 1 81		13	+ 2 16		5	— 0 94	
22	+ 0 68		12	+ 1 84		14	+ 2 01		6	— 1 34	
23	+ 0 26		13	+ 1 92		15	+ 2 10		7	— 1 31	
24	+ 0 53		14	+ 1 82		16	+ 2 27		8	— 1 48	
25	+ 0 52		15	+ 1 58		17	+ 2 06		9	— 1 13	
29	+ 0 31		21	+ 1 55		18	+ 2 45		12	— 1 54	
30	+ 0 30		22	+ 2 09		19	+ 2 70		13	— 1 65	
Apr 1	+ 0 51		23	+ 2 04		21	+ 2 66		14	— 1 05	
2	+ 0 60		24	+ 2 14		22	+ 2 72		16	— 0 81	
4	+ 0 26		25	+ 1 89		23	+ 2 77		Cleaned the Clock		
5	+ 0 25		27	+ 1 89		27	+ 3 10		22	+ 3 03	
6	+ 0 18		29	+ 2 43		28	+ 3 26		23	+ 2 48	
7	+ 0 12		30	+ 2 41		30	+ 3 42		24	+ 2 47	
8	+ 0 53		July 1	+ 2 35		Oct 1	+ 3 06		25	+ 2 42	
9	+ 0 15		4	+ 2 46							

DAILY RATE OF THE TRANSIT CLOCK (Continued)

1842		1843	s	1843	s	1843	s
Dec 26	+ 2 23	Mar 6	+ 3 38	May 10	+ 3 40	A 9	— 2 60
27	+ 2 18	7	+ 2 96	11	+ 3 73	12	— 3 28
28	+ 2 15	8	+ 3 09	12	+ 3 48	11	— 67
29	+ 2 12	9	+ 3 08	13	+ 3 49	17	— 80
30	+ 2 15	10	+ 3 14	15	+ 3 82	18	— 2 41
1843		11	+ 3 16	16	+ 3 43	19	— 2 78
Jan 3	+ 2 09	12	+ 3 34	17	+ 3 2	20	— 2 82
4	+ 2 26	15	+ 2 49	18	+ 3 28	23	— 2 79
5	+ 2 26	17	+ 3 29	19	+ 3 51	25	— 2 8
6	+ 2 27	18	+ 3 59	The Clock had stopped by reason of a spider having got inside		26	— 2 11
7	+ 2 38	19	+ 3 49			28	— 2 8
9	+ 2 25	20	+ 3 53	24	+ 3 67	30	— 5
11	+ 2 54	21	+ 3 68	25	+ 3 22	31	— 2 56
12	+ 2 43	22	+ 3 58	29	+ 3 44	Sept 1	Altered the Clock two minutes
17	+ 2 58	23	+ 3 86	30	+ 3 59	3	— 3 00
18	+ 2 51	24	+ 3 88	31	+ 3 23	4	— 2 63
19	+ 2 7	25	Put back two min	June 1	+ 3 34	5	— 2 74
20	+ 2 48	26	+ 3 57	2	+ 3 39	6	— 2 06
21	+ 2 68	27	+ 3 63	3	Put back three min	7	— 63
22	+ 2 67	28	+ 3 70	4	+ 3 75	Removed a spider from the m side of the Clock	
23	+ 2 62	29	+ 3 50	6	+ 3 32	3	— 1 46
24	+ 2 56	30	+ 3 58	7	+ 3 20	10	— 1 80
25	+ 2 45	31	+ 3 53	8	+ 3 58	12	— 1
27	+ 2 74	April 1	+ 3 85	9	+ 3 30	13	— 2 54
28	+ 2 66	3	+ 3 84	10	+ 3 02	14	— 2 47
29	+ 2 64	4	+ 3 48	13	+ 3 01	19	— 2 0
30	+ 2 63	5	+ 3 49	15	+ 2 69	19	— 44
31	+ 2 59	6	+ 3 33	16	+ 3 33	20	— 70
Feb 1	+ 2 64	7	+ 3 35	17	+ 2 87	21	— 2 30
2	+ 2 52	8	+ 3 60	20	+ 2 61	22	— 19
3	+ 2 56	9	+ 3 56	21	+ 2 63	23	— 1 90
4	+ 2 69	10	+ 4 17	22	+ 2 55	24	— 1 37
5	+ 2 47	11	+ 4 46	23	+ 2 54	25	— 1 70
6	Put back two min	12	+ 3 64	26	+ 3 06	26	— 1 83
7	+ 1 89	13	+ 3 59	27	+ 3 58	27	— 1 84
8	+ 2 57	14	+ 3 89	28	+ 3 01	28	— 1 63
9	+ 2 46	15	+ 3 95	29	+ 3 14	29	— 1 34
10	+ 2 64	16	+ 3 62	30	+ 3 07	30	— 1 28
11	+ 2 04	17	+ 3 86	July 1	+ 3 47	Oct 1	— 1 06
12	+ 2 61	18	+ 4 46	6	+ 2 85	2	— 1 33
13	+ 2 72	19	Wound up and put it back two minutes	8	+ 2 54	3	— 1 36
14	+ 2 69	20	+ 3 49	10	+ 2 86	4	— 1 51
15	+ 2 60	21	+ 3 30	11	+ 2 77	5	— 1 45
16	+ 2 85	22	+ 2 89	13	+ 2 92	7	— 0 94
17	+ 2 59	23	+ 3 25	14	+ 3 07	Cleaned the Clock	
18	+ 2 84	24	+ 3 01	21	+ 3 14	Nov 1	+ 4 41
19	+ 2 66	25	+ 2 88	22	+ 3 30	2	+ 5 17
20	+ 2 60	26	+ 3 23	25	Wound up and put it back the same minutes	3	+ 5 79
21	+ 2 79	27	+ 3 18	27	+ 4 15	4	+ 5 94
22	+ 2 79	28	+ 3 27	29	+ 3 62	5	+ 5 32
23	+ 2 74	29	+ 3 35	31	+ 3 82	6	Regulated the Clock
24	+ 2 73	30	+ 3 48	Aug 2	+ 3 48	7	+ 0 77
25	+ 2 74	May 2	+ 3 45	3	+ 3 78	8	+ 0 76
26	+ 2 73	3	+ 3 58	5	+ 3 92	9	+ 0 84
27	+ 2 89	4	+ 3 96	6	+ 3 92	12	+ 1 33
28	+ 2 88	5	+ 3 64	Found the Clock stopped regu lated it		15	+ 0 90
Mar 2	+ 2 95	6	+ 3 78			16	+ 0 78
3	+ 2 93	7	+ 3 45				
4	+ 2 88	9	+ 3 56				
5	+ 2 82						

DAILY RATE OF THE TRANSIT CLOCK (Continued)

1843	s	1844	s	1844	s	1844	s
No 17	+ 1 20	Feb 1	+ 0 63	April 2	+ 1 16	June 10	— 0 33
18	+ 1 00	3	+ 0 92	3	+ 1 25	12	— 0 16
19	+ 0 96	4	+ 1 00	4	+ 0 92	13	— 0 25
20	+ 1 07	5	+ 1 12	5	+ 1 24	14	— 0 26
23	+ 1 00	6	+ 1 03	6	+ 1 10	15	— 0 22
24	+ 0 95	7	+ 0 95	7	+ 1 04	18	— 0 01
25	+ 0 63	8	+ 1 05	8	+ 1 28	19	— 0 05
26	+ 0 88	9	+ 0 96	9	+ 1 16	20	— 0 08
27	+ 0 35	10	+ 0 94	10	+ 0 72	22	— 0 21
28	+ 0 33	11	+ 0 80	11	+ 0 78	23	+ 0 16
29	+ 0 29	12	+ 0 43	12	+ 0 47	25	— 0 08
30	+ 0 45	13	+ 0 52	13	+ 0 50	26	+ 0 02
Dec 5	+ 0 29	14	+ 0 41	14	+ 0 55	27	— 0 05
8	+ 0 80	15	+ 0 30	15	+ 0 61	28	— 0 02
9	+ 0 93	16	+ 0 18	16	+ 0 56	29	+ 0 21
10	+ 0 86	17	+ 0 05	17	+ 0 64	July 3	+ 0 12
12	+ 0 86	18	— 0 01	18	+ 0 44	4	+ 0 01
13	+ 0 88	19	+ 0 16	19	+ 0 48	5	+ 0 09
14	+ 0 80	20	+ 0 09	20	+ 0 51	6	+ 0 24
15	+ 0 63	21	+ 0 01	21	+ 0 42	8	— 0 13
16	+ 0 62	22	+ 0 04	22	+ 0 37	9	+ 0 27
17	+ 0 48	23	+ 0 03	23	+ 0 33	11	+ 0 03
18	+ 0 28	24	+ 0 02	24	+ 0 27	15	— 0 41
19	+ 0 33	25	— 0 28	25	+ 0 29	16	— 0 09
20	+ 0 18	26	— 0 10	26	+ 0 08	19	— 0 16
21	+ 0 01	27	— 0 02	27	+ 0 19	20	+ 0 06
22	+ 0 18	28	+ 0 19	28	+ 0 15	21	+ 0 33
23	+ 0 27	29	+ 0 21	29	+ 0 05	23	+ 0 39
26	+ 0 12	Mar 1	+ 0 08	30	+ 0 49	24	+ 0 46
27	— 0 09	2	+ 0 25	May 1	+ 0 69	25	+ 0 13
28	+ 0 12	3	+ 0 36	2	+ 0 75	27	+ 0 67
29	+ 0 07	4	+ 0 24	3	+ 0 54	30	+ 0 80
30	— 0 08	5	+ 0 54	4	+ 0 73	31	+ 0 67
31	+ 0 04	6	+ 0 47	5	+ 0 76	Aug 1	+ 0 78
1844		7	+ 0 44	6	+ 1 16	2	+ 0 89
Jan 2	+ 0 09	8	+ 0 47	10	+ 0 67	3	+ 1 07
3	+ 0 08	9	+ 0 42	11	+ 0 44	4	+ 1 00
4	+ 0 06	10	+ 0 37	12	+ 0 72	5	+ 1 09
5	— 0 11	11	+ 0 28	13	+ 0 69	6	+ 0 95
6	+ 0 02	12	+ 0 18	14	+ 0 76	7	+ 0 91
7	— 0 02	13	+ 0 29	15	+ 0 88	8	+ 0 42
8	— 0 06			16	+ 0 86	9	+ 0 75
9	+ 0 02	14	Wound up the Clock and put back 1 min	17	+ 0 92	10	+ 0 83
10	— 0 03			18	+ 0 88	12	+ 0 46
11	+ 0 01	15	+ 0 36	19	+ 0 81	13	+ 0 42
12	+ 0 10	16	+ 0 22	22	+ 0 53	14	+ 0 71
13	+ 0 09	17	+ 0 59	23	+ 0 48	16	+ 0 48
16	+ 0 28	18	+ 0 60	24	+ 0 51	17	+ 0 72
17	+ 0 32	19	+ 0 61	25	+ 0 9	18	+ 0 52
18	+ 0 44	20	+ 0 59	26	+ 0 49	19	+ 0 70
19	+ 0 26	21	+ 0 71	29	+ 0 90	20	+ 0 62
20	+ 0 30	22	+ 1 04	30	+ 0 69		
21	+ 0 19	23	+ 0 87	31	+ 0 42	22	Stopt a few seconds in winding
22	+ 0 15	24	+ 0 68	June 2	+ 0 69		
23	+ 0 03	25	+ 0 68	3	+ 0 70	24	+ 0 36
24	+ 0 13	26	+ 0 89	4	+ 0 40	26	+ 0 76
25	+ 0 14	27	+ 0 78	5	+ 0 01	30	+ 1 27
26	+ 0 14	28	+ 0 77	6	— 0 23	Sept 5	+ 1 26
27	+ 0 21	29	+ 0 96	7	— 0 45	6	+ 1 50
28	+ 0 44	30	+ 0 82	8	— 0 62	7	+ 1 39
29	+ 0 73	31	+ 0 82	9	— 0 43	8	+ 1 45

DAILY RATE OF THE TRANSIT CLOCK (Continued)

1844			1844	s		1845	s		1845		
Sept 9	+ 1 21		Nov 17	+ 1 11		Feb 8	+ 1 35		April 10	+ 1 52	
10	+ 1 07		18	+ 1 46		9	+ 1 42		11	+ 1 73	
11	+ 1 50		19	+ 1 42		10	+ 1 28		12	+ 1 67	
12	+ 0 98		20	+ 1 29		11	+ 1 44		13	+ 1 51	
13	+ 0 90		21	+ 1 50		12	+ 1 35		14	+ 1 85	
14	+ 1 17		2	+ 1 29		13	+ 1 30		15	+ 1 53	
15	+ 1 19		23	+ 1 55		14	+ 1 45		16	+ 1 81	
17	+ 0 94		24	+ 1 16		15	+ 1 46		17	+ 1 65	
18	Put back one min		25	+ 1 11		16	+ 1 27		18	+ 1 78	
19	+ 1 10		26	+ 1 2		17	+ 1 31		19	+ 1 61	
20	+ 1 52		27	+ 1 31		18	+ 1 32		20	+ 1 66	
21	+ 1 47		28	+ 1 18		19	+ 1 49		21	+ 1 86	
22	+ 1 40		29	+ 1 16		20	+ 1 35		22	+ 1 72	
23	+ 1 56		30	+ 1 24		21	+ 1 40		23	+ 1 95	
24	+ 1 91		Dec 2	+ 1 30		22	+ 1 53		24	+ 1 89	
25	+ 2 40		3	+ 1 26		23	+ 1 44		25	+ 1 86	
26	+ 1 96		4	+ 1 24		24	+ 1 58		26	+ 1 83	
27	+ 1 93		5	+ 1 30		25	+ 1 53		27	+ 1 82	
28	+ 1 89		6	+ 1 23		26	+ 1 66		28	Stopt in winding	
29	+ 1 80		9	+ 1 33		27	+ 1 62		29	+ 1 24	
30	+ 1 78		10	+ 1 65		28	+ 1 55		30	+ 1 30	
Oct 1	+ 1 56		11	Stopt in winding		Mar 1	+ 1 40		May 1	+ 1 17	
2	+ 1 84		12	+ 1 36		2	+ 1 51		2	+ 1 20	
3	+ 1 88		15	+ 1 32		3	+ 1 27		3	+ 1 18	
4	+ 1 78		16	+ 1 78		4	Stopt in winding		4	+ 1 16	
5	+ 2 17		21	+ 1 73		5	+ 1 27		5	+ 1 19	
9	+ 2 07		22	+ 2 21		6	+ 1 36		7	+ 1 40	
10	+ 2 45		1845			7	+ 1 50		8	+ 1 24	
12	+ 2 34		Jan 3	+ 2 27		8	+ 1 41		10	+ 1 42	
14	+ 2 19		4	+ 2 34		9	+ 1 40		11	+ 1 17	
15	+ 2 00		5	+ 2 39		10	+ 1 45		12	+ 1 07	
16	Stopt 15 in windg		8	Put back one min		11	+ 1 44		13	+ 0 93	
17	+ 1 59		10	+ 1 72		12	+ 1 22		14	+ 0 77	
18	+ 1 54		11	+ 1 59		13	+ 1 22		15	+ 0 58	
19	+ 1 62		12	+ 1 59		14	+ 1 30		16	+ 0 80	
21	+ 1 66		13	+ 1 48		15	+ 1 44		17	+ 0 78	
22	+ 1 61		14	+ 1 60		16	+ 1 07		18	+ 0 77	
23	+ 1 58		15	+ 1 44		17	+ 1 51		19	+ 0 77	
24	+ 1 62		16	+ 1 57		19	+ 1 52		20	+ 0 85	
25	+ 1 69		17	+ 1 56		20	+ 1 44		21	+ 0 75	
27	+ 1 32		18	+ 1 45		21	+ 1 57		22	+ 0 76	
28	+ 1 28		19	+ 1 42		22	+ 1 51		23	+ 0 48	
29	+ 1 26		20	+ 1 35		23	+ 1 39		24	Stopt in winding	
30	+ 1 32		21	+ 1 55		24	+ 1 58		25	+ 0 38	
31	+ 1 61		22	+ 1 30		25	+ 1 40		26	+ 0 50	
Nov 2	+ 1 46		23	+ 1 34		26	+ 1 60		27	+ 0 41	
3	+ 1 48		24	+ 1 55		27	+ 1 77		28	+ 0 50	
4	+ 1 51		25	+ 1 48		28	+ 1 70		30	+ 0 42	
5	+ 1 69		26	+ 1 50		29	+ 1 68		31	+ 0 43	
6	+ 1 64		27	+ 1 62		30	+ 1 68		June 2	+ 0 46	
7	+ 1 64		28	+ 1 52		31	+ 1 86		3	+ 0 35	
8	+ 1 21		29	+ 1 59		April 1	Put back one min		4	+ 0 61	
9	+ 1 38		30	+ 1 59		2	+ 1 28		5	+ 0 36	
10	+ 1 43		31	+ 1 64		3	+ 1 30		6	+ 0 54	
11	+ 1 27		Feb 1	+ 1 67		4	+ 1 58		7	+ 0 26	
12	+ 1 48		2	+ 1 65		5	+ 1 48		8	+ 0 72	
13	Put back one min		3	+ 1 80		6	+ 1 48		9	+ 0 60	
14	+ 1 02		4	+ 1 38		7	+ 1 52		10	+ 0 85	
15	+ 1 22		6	+ 1 33		8	+ 1 60		11	+ 0 70	
16	+ 1 57		7	+ 1 37		9	+ 1 48		12	+ 0 87	

DAILY RATE OF THE TRANSIT CLOCK (Continued)

1845	s	1845	s	1845	s	1846	s	
May 13	+ 0 91	Aug 28	— 2 26	Nov 8	— 2 28	Jan 22	— 0 80	
14	+ 0 90	29	— 2 38	9	— 2 11	23	— 0 65	
16	+ 1 40	Put forward two minutes		10	— 2 38	24	— 0 71	
17	+ 1 39	31	— 2 34	The Catgut by which the weight was suspended broke		25	— 0 92	
18	Stopt in winding	Sept 1	— 2 21	16	— 0 51	26	— 0 81	
19	+ 0 83	2	— 2 49	17	— 0 92	27	— 0 76	
20	+ 0 77	3	— 2 18	18	— 0 99	28	— 0 69	
24	+ 0 77	4	— 2 6	19	— 0 82	29	— 0 66	
25	+ 0 97	5	— 1 95	21	— 0 85	31	— 0 80	
26	+ 0 66	7	— 1 82	22	— 0 98	Feb	1	— 0 95
27	+ 0 89	8	— 1 91	24	— 0 86		2	— 0 76
28	+ 0 51	9	— 2 09	25	— 0 88		3	— 0 77
29	+ 0 98	10	— 2 10	26	— 0 93		4	— 0 57
30	+ 0 52	11	— 2 02	27	— 1 23	5	— 0 33	
July	1	12	— 2 09	28	— 0 88	6	— 0 36	
	2	13	— 2 09	29	— 1 09	10	+ 0 46	
	3	14	— 1 95	30	— 1 31	11	+ 0 38	
	4	15	— 1 77	Dec	1	— 1 20	12	+ 0 61
	5	17	— 1 82		5	— 0 66	13	+ 0 40
	6	18	— 1 71		6	— 0 84	14	+ 0 56
	7	19	— 1 71		9	— 0 65	15	+ 0 18
	8	20	— 1 93	Put forward one minute		16	+ 0 08	
The oil on the cement appearing to be thick I caused the Clock to be cleaned		21	— 1 19	11	— 0 63	17	— 0 15	
		24	— 1 70	12	— 0 64	18	0 00	
		25	— 1 73	13	— 0 73	19	— 0 03	
		26	— 1 81	14	— 0 81	20	— 0 18	
		28	— 1 70	17	— 1 04	21	— 0 16	
		29	— 1 87	18	— 0 79	22	— 0 16	
		30	— 1 70	19	— 0 91	23	— 0 04	
		Oct	1	— 1 85	21	— 0 88	24	— 0 04
			2	— 1 81	22	— 0 82	25	— 0 06
			3	— 1 72	The Clock weight became entangled by a knot which had been tied on the 10th November		26	— 0 13
			5	— 1 63	24	— 0 34	27	— 0 16
		6	— 1 76	29	— 0 16	28	— 0 50	
7	— 1 78	30	— 0 21	Mar	1	— 0 31		
8	— 1 60	31	— 0 17		2	— 0 36		
9	— 1 53	1846			3	— 0 28		
10	— 1 69	Jan	2		— 0 29	4	— 0 08	
11	— 1 77	3	— 0 29	5	— 0 09			
12	— 1 54	4	— 0 32	6	— 0 04			
17	— 1 42	6	+ 0 09	7	— 0 17			
18	— 1 64	9	+ 0 38	8	— 0 01			
20	— 1 60	10	+ 0 07	9	+ 0 33			
21	— 1 57	11	— 0 54	10	+ 0 24			
22	— 1 41	12	— 0 56	11	+ 0 17			
23	— 1 42	13	— 0 64	12	+ 0 72			
24	— 1 52	14	— 0 65	13	+ 0 37			
25	— 1 65	15	— 0 79	14	+ 0 48			
Put forward one minute		16	— 0 73	15	+ 0 5			
		27	— 1 57	16	+ 0 71			
		28	— 1 55	17	+ 0 80			
		30	— 1 78	18	+ 0 83			
		31	— 1 95	19	+ 0 57			
		Nov	1	— 1 62	20	+ 0 43		
			2	— 1 92	21	+ 0 50		
			3	— 1 64	22	+ 0 47		
			4	— 1 86	23	+ 0 53		
			5	— 2 12	24	+ 0 93		
			6	— 1 74	25	+ 1 42		
			7	— 2 07	26	+ 1 08		
		21	— 0 77	27	+ 0 73			

DAILY RATE OF THE TRANSIT CLOCK (Continued)

1846			1846	s		1846	s		1846	s
Mar 28	+ 0 73		The Clock stopped applied out to the escapement			Aug 28	— 1 12		Dec 2	— 1 06
29	+ 0 49					29	— 1 36		8	— 0 24
30	+ 0 78					31	— 1 22		9	— 0 22
31	+ 0 55		June 7	— 1 15		Sept 3	— 1 17		10	— 0 16
April 1	+ 0 28		8	— 1 09		4	— 1 23		11	— 0 27
2	+ 0 51		9	— 1 00		5	— 1 03		12	— 0 25
3	+ 0 49		10	— 1 48		6	— 1 31		14	— 0 23
4	+ 0 35		11	— 1 27		7	— 1 34		18	— 0 80
5	+ 0 38		12	— 0 94		8	— 1 38		19	— 0 86
6	+ 0 35		13	— 0 82		10	— 1 33		21	— 0 94
7	+ 0 50		14	— 0 75		11	— 1 31		22	— 0 88
8	+ 0 46		15	— 0 46		12	— 1 24		27	— 0 56
9	+ 0 41		16	— 0 57		14	— 1 33			
10	+ 0 53		17	— 0 51		15	— 1 32	1847		
11	+ 0 26		18	— 0 63		16	— 1 49	J n 5	— 0 07	
12	+ 0 38		19	— 0 77		17	— 1 39	6	— 0 03	
13	+ 0 49		20	— 0 90		18	— 1 05	7	+ 0 18	
14	+ 0 76		21	— 0 82		21	— 1 17	8	— 0 35	
16	+ 1 14		22	— 0 89		22	— 1 33	9	— 0 15	
17	+ 0 84		23	— 0 85		23	— 1 60	11	— 0 08	
18	+ 0 77		24	— 0 69		24	— 1 30	12	+ 0 04	
19	+ 0 49		25	— 0 70		25	— 1 28	13	— 0 19	
20	+ 0 52		26	Stopt n winding		26	— 1 26	14	+ 0 12	
21	+ 0 44		30	— 0 64		28	— 1 29	15	+ 0 03	
22	+ 0 28		July 2	— 0 98		29	— 1 41	16	— 0 11	
23	+ 0 22		3	— 1 07		30	— 1 25	18	— 0 34	
24	+ 0 38		4	Forwa ded 2 mins		Oct 2	— 1 20	19	— 0 31	
25	+ 0 07		5	— 1 23		3	— 1 12	20	— 0 49	
26	+ 0 16		6	— 1 17		6	— 1 00	21	— 0 47	
27	+ 0 15		8	— 0 84		7	— 0 97	22	— 0 68	
28	+ 0 19		9	— 1 03		8	— 0 77	23	— 0 46	
29	+ 0 17		10	— 1 08		9	— 0 67	25	— 0 65	
30	+ 0 50		13	— 0 83		10	— 0 86	26	— 0 71	
May 1	+ 0 20		14	— 0 84		13	— 0 88	27	— 0 49	
2	+ 0 30		20	— 0 55		14	— 0 93	28	— 0 67	
3	+ 0 34		27	— 0 64		15	— 0 84	29	— 0 49	
4	+ 0 37		28	— 0 85		16	— 0 93	30	— 0 57	
5	+ 0 60		29	— 0 96		23	— 1 27	31	— 0 59	
7	— 0 21		30	— 1 20		24	— 1 52	Feb 1	— 0 87	
8	— 0 28		31	— 1 11		26	— 1 51	2	— 0 84	
9	— 0 10		Aug 1	— 1 53		27	— 1 48	3	— 0 94	
10	+ 0 09		2	— 1 48		28	— 1 30	4	— 1 11	
11	— 0 06		3	— 1 14		29	— 1 48	5	— 0 87	
12	— 0 23		5	— 1 41		30	— 1 89	6	— 1 13	
13	+ 0 10		6	— 1 07		31	— 2 00	9	— 0 98	
14	— 0 12		10	— 1 28		Nov 2	— 0 95	11	— 0 95	
15	— 0 16		11	— 1 07		3	— 0 82	12	— 0 72	
16	+ 0 22		12	— 0 86		4	— 0 96	13	— 0 86	
19	+ 0 21		13	— 0 78		5	— 0 90	15	— 0 80	
20	+ 0 41		15	— 0 81		6	— 0 88	16	— 0 76	
21	+ 0 15		17	— 0 73		7	— 0 88	17	— 0 68	
22	+ 0 17		18	— 0 91		Clock stopt		18	— 0 82	
24	+ 0 27		19	— 0 89		11	— 0 68	19	— 0 78	
27	+ 0 38		20	— 1 05		12	— 0 65	20	— 0 62	
28	+ 0 23		21	Forw rded 1 min		14	— 0 70	22	— 0 70	
29	+ 0 55		22	— 1 16		17	— 1 45	23	— 0 72	
31	+ 0 56		24	— 1 08		19	— 1 85	24	— 0 42	
June 1	+ 0 39		25	— 1 10		20	— 1 73	25	— 0 21	
3	+ 0 32		26	— 1 43		28	— 1 29	26	+ 0 14	
4	+ 0 51		27	— 1 38		30	— 1 50	27	+ 0 09	
5	+ 0 60					Dec 1	— 1 14	Mar 2	— 0 39	
								3	— 0 20	

DAILY RATE OF THE TRANSIT CLOCK (*Continued.*)

1847	s	1847	s	1847	s	1847	s
Mar 4	+ 0 05	April 23	+ 0 34	June 12	— 0 25	Sept 21	+ 0 66
5	— 0 03	24	+ 0 69	14	— 0 26	22	+ 0 83
6	+ 0 12	25	+ 0 23	15	— 0 42	25	+ 1 19
8	— 0 01	26	+ 0 54	19	— 0 18	27	+ 1 16
9	+ 0 16	27	+ 0 19	July 2	— 0 44	Oct 3	+ 1 26
10	+ 0 16	28	+ 0 18	6	— 0 45	4	+ 1 26
11	+ 0 19	29	+ 0 03	7	— 0 04	5	+ 1 09
12	+ 0 16	30	+ 0 01	8	+ 0 10	6	+ 1 32
13	+ 0 18	May 1	+ 0 16	9	— 0 12	7	+ 2 39
16	+ 0 25	3	+ 0 09	10	+ 0 01	8	+ 2 26
17	+ 0 17	4	+ 0 08	14	+ 0 0	9	+ 2 33
18	+ 0 12	5	+ 0 19	15	+ 0 35	11	+ 2 52
19	+ 0 22	6	+ 0 03	20	— 0 43	12	Put back one min
23	+ 0 37	7	+ 0 09	21	— 0 30	16	+ 2 36
24	+ 0 84	8	+ 0 04	22	+ 0 34	18	+ 2 33
25	+ 0 67	10	+ 0 20	Aug 6	+ 0 75	19	+ 2 71
26	+ 0 85	11	+ 0 11	10	+ 0 94	20	+ 2 40
27	+ 0 81	12	— 0 17	11	+ 1 03	21	+ 2 23
28	+ 0 58	13	+ 0 02	12	+ 0 80	22	+ 2 60
29	+ 0 77	14	+ 0 16	13	+ 0 44	23	+ 2 61
30	+ 0 77	15	+ 0 18	16	+ 0 48	26	+ 2 50
31	+ 0 96	17	— 0 03	17	+ 0 64	27	+ 2 39
Apr 1	+ 0 75	18	— 0 08	18	+ 0 50	28	+ 2 72
2	+ 0 91	19	+ 0 07	20	+ 0 76	29	+ 2 29
3	+ 0 70	20	+ 0 10	21	+ 0 71	Nov 5	+ 2 44
5	+ 0 78	21	0 00	23	+ 0 92	6	+ 2 50
6	+ 0 72	2	+ 0 28	24	+ 0 77	7	+ 2 72
7	+ 0 83	23	— 0 05	25	+ 0 76	8	+ 2 38
8	+ 0 8	25	— 0 06	26	+ 0 71	9	+ 2 42
9	+ 0 70	26	— 0 02	Sept 3	+ 1 01	10	+ 2 75
10	+ 1 00	31	+ 0 02	8	+ 0 86	11	+ 2 64
12	+ 0 47	June 1	— 0 08	9	+ 0 37	13	+ 2 43
13	+ 0 61	2	— 0 10	11	+ 0 63	16	+ 2 80
14	+ 0 60	3	— 0 06	13	+ 0 96	18	+ 2 74
19	+ 0 49	7	— 0 03	15	+ 0 90	19	+ 2 50
20	+ 0 44	8	— 0 13	17	+ 0 30	20	+ 2 60
21	+ 0 49	9	— 0 02	18	+ 0 51		
22	+ 0 44	11	— 0 32	20	+ 0 80		

METEOROLOGICAL INSTRUMENTS EMPLOYED

At page 34 Vol IV of the Madras Results I have given an account of the measures adopted for obtaining a knowledge of the error of the Barometer employed where it appears that the correction subsequent to the 10th May 1837 was that due to capillary action only $+ 0.51$ Inch. This Barometer continued to be employed until the morning of the 5th June 1842 when a sudden fall occurred to the amount of two tenths of an inch which was not confirmed by another Barometer with which I occasionally had been accustomed to compare it continuing to watch the two Barometers the difference gradually increased during the day and on examination it turned out that the glass cistern had cracked by reason of the hot weather and thereby allowing some of the Mercury to escape. On the 7th June 1842 I availed myself of the loan of an excellent Barometer by *Cary* which I subsequently compared with the Standard Barometer at the Magnetic Observatory and perceived to require a correction $- 0.040$ Inch. This Barometer continued to be employed until the 17th June 1842 when I succeeded in procuring a Standard Barometer by Newman—diameter of tube 0.53 Inch with glass cistern & c. This Barometer which I named Newman No 49 then stood 0.10 lower than the Standard No 42 employed by Captain Ludlow at the Magnetic Observatory and from comparison made on the 3d December 1847 it appeared that the Observatory Barometer (No 49) stood 0.13 lower than No 42 now the latter Instrument had been compared with the Royal Society Standard previously to leaving England in 1840 when it appeared to require a correction $- 0.06$ or the Barometrical readings as set down in the Circular Book require the following corrections

<i>Date</i>				<i>Correction</i>
From	1st January 1838	to	5th June 1842	$+ 0.51$
—	7th June 1842	—	16th June 1842	$- 0.40$
—	17th June 1842	—	31st December 1847	$+ 0.07$

The Thermometers employed are two of ordinary construction by Bate which nevertheless differed by only a small fraction of a degree from Standard by Troughton with which they were compared in 1836 but a recent comparison with a Standard by Newman which was supplied to the Madras Magnetic Observatory shows that they each require a correction $+ 0.7$

THE MADRAS MURAL CIRCLE

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THE MURAL CIRCLE was constructed by Dolland (see Vol I) it is 48 inches in diameter and is provided with a telescope of 49 inches focal length with a treble object glass of 3½ inches aperture and a power of 170 has on all occasions been employed the divisions to every 5 are very beautifully executed on a slip of gold let into the circumference of the ring but having been inadvertently set off from a scale of equal parts of 5 in length they are systematically erroneous and require the corrections as given at page 217 Vol V these being applied the Madras Mural Circle is I believe second to no other similarly constructed Instrument the divisions are read off by four Micrometer Microscopes these have usually been examined as to runs once in each week but since the excess or defect of their measurement from division to division has very seldom exceeded two or three tenths of a second no correction for runs has been allowed the observations with this instrument have with but slight exception been made simultaneously with those made with the Transit Instrument—the Refractions as heretofore have been computed from Atkinson's tables as given in the 2d volume of the Royal Astronomical Society's Memoirs and the mean places employed in computing the Index Error are those brought up from the Madras Catalogue (Vol VI) In addition to the ordinary comparison of the observations of Stars with their known places I have continued to determine the Index Error by the Reflecting Collimator a plan which consists in observing the coincidence of the horizontal wire with its image as seen in a basin of quicksilver placed beneath the telescope as pointed to the North whence we get

$$\frac{-(180 + C + I)}{2} = I.E.$$

Where I represents the Instrumental reading and the error of division due to that reading The observations with the Reflecting Collimator have generally been made at 6 A.M. noon 6 P.M. and midnight On comparing the Index Error thus determined with those which have resulted from the observations of Stars the coincidences on the whole are by no means satisfactory the differences amounting in two instances to above four seconds! In a general way I have found these observations as made by my Assistants to agree within very narrow limits with those made by myself on one occasion however I differed from an Assistant (Verasawmy) by 2' on examining his bisection I had no doubt whatever of its being intolerably erroneous whereas his impression of my own bisection was that it was equally in fault whereas another observer took up a mean between us we repeated our bisections several times on this and the succeeding day with like result but a few days afterwards our disagreement had ceased Observations of the Microscopes to determine the errors of runs have regularly been made once a week in a general way the error has been extremely regular and has seldom amounted to half a second but having omitted to employ it in the reduction of the observations I have thought it unnecessary to furnish the amount here

INDEX ERROR OF THE MURAI CIRCLE

1838	N b	I d L by St	N b	I d Err by Refl g C l l t	D ff	1838	N b	I d L by St	N l	I d Err by Refl t g C l l t	D ff						
J u a y	1	6	—0	37 29	2	—0	36 68	—0 61	M h	4	6	—0	37 04	3	—0	38 41	+ 1 37
	2	6		36 06	3		36 7	+ 0 51			6		37 10	4		37 10	+ 0 60
	4	7		36 38	4		36 08	—0 30			8		37 92	3		37 99	+ 0 07
	5	7		36 66	4		35 5	—1 11			7		37 66	3		37 0	—0 40
	6	7		37 00	4		3 45	—1 55			8	6	38 55	4		39 02	+ 0 47
	7			37 30	3		36 2	—1 08			9	4	38 37	4		38 4	+ 0 08
	8	9		37 91	4		35 85	— 06			10	6	37 76	4		38 85	+ 1 09
	9	10		38 9	4		36 13	— 16			11		38 06	4		39 00	+ 0 94
	10	11		38 55	4		36 60	—1 95			12	6	37 89	3		38 1	+ 0 32
	11	6		38 08	3		36 17	—1 91			13		37 31	3		37 73	+ 0 39
	12	5		38 61	2		36 55	—2 06			14		37 06	4		38 7	—0 9
	13	7		38 90	3		36 78	—2 1			15	6	38 77	3		40 38	+ 1 61
	14	11		38 8	3		35 6	—3 20			16	5	38 74	4		39 10	+ 0 4
	16	7		38 39	4		36 65	—1 74			17	6	39 33	3		38 8	—0 48
	17	6		38 86	4		3 87	—1 01			18	6	38 93	4		38 6	—0 8
	18	7		38 00	4		37 13	—1 56			19	6	39 40	3		39 06	+ 0 6
	19	7		39 85	4		38 7	—1 18			20	6	39 23	4		38 78	—0 45
	20	6		38 32	3		38 31	—0 01			21	5	39 27	4		38 56	—0 71
	21			38 60	3		38 41	—0 8			22	7	39 62	4		38 64	—0 98
	22	8		39 60	3		38 91	—0 69			23	5	39 89	4		38 43	—1 10
	23	7		36 0	9		36 30	—0 20			24	6	39 8	4		39 00	—0 8
	24	5		36 10	4		3 87	—0 23			25	6	40 10	4		38 77	—1 33
	25	5		36 66	3		36 1	—0 45			26	6	39 99	8		38 90	—1 09
	26	6		3 67	3		36 41	—1 26			27	6	38 64	4		38 23	—0 11
	27	5		37 06	3		35 81	—1 25			28	6	38 99	4		38 39	—0 60
	28	5		36 50	3		35 90	—0 60			29	6	39 31	4		38 88	—0 43
Feb ruary	1	6		37 80	3		37 11	—0 69			30	6	38 23	3		38 88	+ 0 65
	2	5		38 65	3		36 46	—2 19	Ap l	1	5		38 79	4		38 60	—0 19
	3	3		38 74	3		36 00	— 74		2	6		38 48	4		37 45	—1 03
	4	6		39 16	3		37 03	—2 13		3			39 33	3		37 9	—1 74
	5	6		38 4	3		36 51	—1 88		4	6		38 33	4		37 95	—0 38
	6	7		38 29	4		37 80	—0 49		5			39 44	4		37 19	—2 2
	7	5		38 50	4		37 20	—1 30		6			39 04	4		38 5	—0 49
	8			38 1	4		37 54	—0 77		7	6		39 4	4		37 99	—1 25
	9	6		38 74	4		38 6	—0 09		8	8		39 00	8		38 04	—1 02
	10	6		38 29	4		37 76	—0 3		9	6		39 83	6		37 86	—1 97
	11	5		38 43	4		39 09	+ 0 66		10	5		38 97	6		38 55	—0 42
	12	5		39 08	4		38 71	—0 37		11	6		37 83	4		37 74	—0 09
	13	5		37 55	3		37 59	+ 0 04		12	8		37 86	6		37 31	—0 2
	14	6		38 05	4		38 08	+ 0 03		13	6		37 33	4		37 73	+ 0 40
	15	6		38 36	4		39 22	+ 0 86		14	5		37 93	4		38 15	+ 0 20
	16	8		38 15	4		38 21	+ 0 06		15	6		37 97	4		37 17	—0 80
	17	8		38 20	4		38 61	+ 0 41		16	4		37 46	4		37 51	+ 0 05
	18	5		37 67	4		38 27	+ 0 60		17							
	19	5		38 74	4		38 50	—0 24		18							
	20	5		39 14	4		40 00	+ 0 86		19	4	+ 0	2 15		+ 0	4 45	— 30
	21	5		38 3	4		38 98	+ 0 63		20	5		3 09	4		4 24	—1 15
	22			38 08	4		38 10	+ 0 00		21	3		3 20	3		4 20	—1 00
	23	5		38 07	3		37 08	—0 99		22	5		3 91	4		4 15	—0 24
	24	8		38 1	4		37 70	—0 42		23	4		4 26	4		3 24	+ 1 02
	25	6		37 47	3		37 42	—0 05	M y	1	6		4 64	4		3 77	+ 0 87
	26	7		37 19	3		37 78	+ 0 9		2	7		4 80	4		6 23	—1 43
	27	6		38 06	4		38 26	+ 0 20		3	6		5 30	3		6 95	—1 6
	28	5		37 90	4		37 97	+ 0 07		4	8		4 91	8		5 06	—0 15
Mar h	2	4		37 60	3		38 65	+ 1 05		5	7		00	9		6 65	—1 65
	3	5		37 48	2		38 84	+ 1 36		6	6		5 10	3		7 23	—2 13

INDEX ERROR OF THE MURAL CIRCLE (Continued)

1838	N b	I d Err by St	N b	I d L by Refl C H t	D ff	1838	N b	I d L by St	N b	I d Err by Refl C H t	D ff
May 11	4	+0 5 40	4	+0 6 61	-1 21	O t b 9		+1 1 8	4	+1 3 0	+0 78
12	5	5 37	3	7 32	-1 95	10	8	3 43	4	3 88	-0 45
13	5	5 89	3	7 06	-1 17	11	8	2 29	4	3 50	-1 1
14 15	8	5 66	8	6 68	-1 02	12	6	2 18	4	3 20	-1 02
16 17	8	6 22	7	6 27	-0 05	13 19	6	2 62	22	3 42	-0 80
18	6	6 12	4	6 31	-0 19	20	6	1 93	4	2 38	-1 05
19	5	5 65	4	5 74	-0 09	22 23	10	1 6	8	3 48	-1 83
20	5	5 9	4	4 50	+0 89	24 25	10	1 33	7	3 19	-1 86
21 22	5	5 89	8	5 53	+0 30	26	5	2 59	3	2 74	-0 15
23 24	9	5 95	7	36	+0 59	N mb 2	6	3 03	4	5 57	-2 4
	6	6 52	4	4 77	+1 75	4 7	8	4 13	11	5 04	-0 91
26	5	6 84	4	5 35	+1 49	13 15	6	6 53	9	7 36	-0 83
27	4	6 96	3	6 37	+0 9	17 18	7	6 01	6	7 05	-0 98
28		7 4	3	6 12	+1 03	19 3	8	6 86	12	8 26	-1 40
31	5	6 44	4	5 96	+0 48	24	6	93	3	8 00	-2 12
J 1	5	6 77	4	6 29	+0 48	2 27	6	6 29	10	7 89	-1 60
2	5	6 46	4	5 9	+0 1	Dec nl r 1	6	07	4	8 46	-3 39
3 8	5	5 90	16	7 00	-1 10	2 4	6	5 83	8	7 94	-2 11
9 18	6	7 29	24	7 7	+0 02	8	6	5 82	3	7 27	-1 4
20 6	10	5 76	2	5 53	+0 23	9 10	8	6 11	6	7 0	-1 38
27	6	5 23	4	5 79	-0 6	11	6	6 66	4	7 7	-1 09
28	6	5 20	4	5 95	-0 7	12		6 34	4	7 57	-1 23
J ly 1 5	6	7 01	14	5 97	+1 04	13		5 86	4	7 70	-1 84
6 10	7	6 41	15	6 01	+0 40	14	6	6 34	4	7 82	-1 48
12	6	6 69	4	5 36	+1 33	15 16	10	5 77	7	7 70	-1 93
13 22	7	7 10	27	5 81	+1 29	17	6	5 24	4	7 81	-2 7
23	4	6 29	3	5 33	+0 96	18	6	4 72	4	7 71	-2 99
24	5	5 97	4	5 80	+0 17	19	6	3 28	4	7 09	-3 81
27	6	5 81	4	5 49	+0 32	20 21	8	3 78	7	7 22	-3 14
28	5	6 11	4	5 16	+0 1	22	8	3 17	4	6 09	-2 92
29	6	5 67	4	5 10	+0 57	23 24	10	3	7	5 82	-2 7
30 31	5	6 48	7	4 90	+1 8	25	5	4 10	4	5 88	-1 19
Augu t 1 2	5	5 63	6	4 75	+0 88	26 28	6	3 51	5	4 90	-1 39
3 6	5	6 40	13	4 51	+1 89	29 31	8	2 83	6	4 22	-1 39
8 9	8	5 61	7	4 56	+1 08	1839					
10	6	4 14	3	4 55	-0 41	J y 1 2	5	3 6	5	4 58	-0 93
12 17	7	5 34	19	4 88	+0 46	3 4	8	3 89	6	5 29	-1 40
19 20	5	5 35	20	1 77	+0 58			2 91	4	4 5	-1 34
29 S pt 1	5	4 41	1	4 6	-0 28	6	5	3 01	4	4 68	-1 64
3 4	6	3 57	6	4 38	-0 81	7 8	7	3 02	7	4 8	-1 6
6	5	3 68	3	4 13	-0 75	10	5	2 9	3	4 68	-2 39
7 9	6	3 84	9	4 48	-0 61	11 12	7	1 47	6	4 09	-2 62
						13 15	6	2 73	9	5 25	-2 52
						16	5	1 95	4	3 81	-1 89
11	6	-1 23 72	4	-1 4 3	+0 63	17	7	1 70	3	4 30	-2 60
12	6	1 2 89	4	26 54	+3 6	18	6	1 91	4	4 10	-1 19
13 15	6	3 54	9	24 92	+1 38	19	6	1 81	4	3 50	-1 69
						20	6	2 62	3	4 08	-1 46
						21	4	2 51	4	4 70	-2 16
						23	5	1 43	4	4 65	-3 22
26 27	8	+1 3 48	7	+1 3 39	+0 09	25 27	6	2 54	10	4 17	-1 63
28 29	8	2 64	7	3 48	-0 84	28 29	6	2 22	7	3 97	-1 75
30 O t 1	8	2 39	8	3 40	-1 01	30		3 39	4	4 58	-1 19
2 6	9	2 49	14	3 07	-0 58	31	5	2 86	4	4 40	-1 63
7 8	8	2 85	8	2 67	+0 18	Feby 2 3	5	1 98	8	4 84	-2 86
						4 5	6	1 5	7	4 48	-2 93

INDEX ERROR OF THE MURAL CIRCLE (Continued)

18 9	N b	I l E by St	N b	I d E by Ref t g C l l t	D ff	1839	N b	I l E by St	N b	I d E by R f t g C l l t	D ff
F b u a r y 8	4	+1 3 20	4	+1 4 20	—1 00	M y 12	5	+1 5 04	4	+1 6 61	—1 57
10	5	2 93	4	4 03	—1 10	14 15	7	4 83	7	97	—1 11
11	5	1 78	4	3 92	—2 14	16 0	7	08	16	6 35	—1 32
12	6	1 82	3	3 71	—1 9	21 5	8	4 97	13	6 36	—1 39
13	6	0 60	3	3 75	—3 1	J 13 1	9	6 27	2	6 91	—0 67
14	6	1 61	4	3 8	—21	22 23	7	6 78	5	7 17	—0 33
1 16	7	1 70	7	3 83	—1 13	24 8	8	7 14	14	7 63	—0 11
17 18	7	2 29	6	3 91	—1 65	J ly 5 29	8	6 62	72	8 3	—1 73
19	5	2 03	3	3 78	—1 7	30 31	10	6 3	6	8 6	—1 31
20	7	1 41	2	3 98	—57	A g 1 6	7	6 20	15	7 14	—1 1
21	5	1 02	4	3 7	—2 65	7 16	8	6 61	28	7 8	—1 1
22	6	1 50	4	3 83	—83	S pt 4 13	7	11 29	30	8 32	+2 97
23 24	10	2 19	3	3 73	—1 54	16 21	7	12 03	18	1 28	—0 25
2 26	10	1 68	6	3 59	—1 01	23	6	1 1	4	12 90	—0 36
27	8	1 26	3	3 61	—2 35	24		12 5	4	12 51	+0 01
28 M 1 1	7	0 59 99	6	3 99	—4 03	2 27	5	12 31	10	11 60	+0 71
2	6	1 00	3	3 37	—3 32	O t b 4		10 80	3	12 84	—2 01
3	6	0 48	2	3 93	—3 45	9		9 47	4	11 33	—1 86
5	5	1 35	2	3 59	—21	10 12		10 11	8	11 8	—1 71
6	6	0 9	3	4 03	—3 06	13 1	7	10 18	J	11 95	—1 77
7	6	1 69	3	4 13	—2 44	16	6	10 17	4	12 97	—1 10
8 9	7	1 63	6	4 18	—5	17 18	9	10 01	6	11 66	—1 6
10 12	8	2 20	19	3 71	—1 51						
13 14	8	0 78	8	3 7	—2 97						
15 16	6	0 67	8	3 61	—2 91						
17 18	8	1 15	8	3 9	—2 44	N b 16	6	+ 1 39	3	+2 0 41	+0 9
19 22	9	2 63	12	3 14	—0 51	17	6	2 07	J	0 22	+1 8
23	6	1 68	4	3 82	—2 14	18	7	0 53	3	1 93	—1 10
24	6	2 15	4	3 65	—1 50	19	6	1 58	3	1 9	—0 37
25	6	2 04	4	2 89	—0 8	20	6	0 68	3	1 81	—1 13
26	6	1 96	4	3 99	—1 43	21	6	1 19	3	1 83	—0 64
27	6	2 6	4	3 25	—0 J J	22	6	0 69	3	1	—0 93
28	6	1 73	4	4 25	—2 52	23	6	0 7	3	1 9	—1 0
29	5	2 2	4	73	—1 51	24	8	0 4	6	1 17	—1 3
30	5	4 07	4	3 97	+0 10	27	5	1 7 97	3	0 89	—32
31	5	3 01	4	4 18	—1 17	29 30	8	1 8 21	6	1 9	—3 08
A l 1 1 2	9	2 83	6	3 63	—0 80						
3 4	10	3 35	5	3 85	—0 0						
5	6	2 83	4	3 90	—1 07						
6 7	8	3 37	7	3 92	—0 55	1840					
8	5	4 29	4	4 12	+0 17	J y 15	5	+0 11 08	4	+0 12 02	—0 91
11 12	9	3 16	6	4 75	—1 59	16	6	11 36	4	11 02	+0 34
14 15	8	3 69	7	5 59	—1 90	17 18	7	11 24	7	10 41	+0 80
16 17	8	3 45	6	6 42	—2 97	19	4	12 75	4	11 65	+1 10
18	5	3 57	4	5 64	—2 07	0	5	10 35	4	11 36	—1 01
19	6	3 42	4	5 95	—2 33	21	5	9 67	4	10 99	—1 32
20	6	3 49	4	5 78	—2 29	22	4	11 37	3	11 10	+0 27
25 26	10	4 31	7	7 48	—3 17	23	4	11 45	3	10 47	+0 38
27 28	9	4 75	6	7 38	—2 63	24	4	10 40	4	11 04	—0 64
29 M y 1	6	4 93	10	7 28	—2 3	25	6	11 30	3	11 2	+0 05
3	6	4 10	6	7 26	—3 16	26 27	6	10 34	7	12 00	—1 66
4 6	5	4 41	7	7 33	—2 92	28	6	9 7	3	11 30	—1 8
7 8	7	4 75	8	6 36	—1 61	29	5	10 12	4	11 96	—1 84
9	6	4 08	4	6 87	—2 79	30	6	10 85	4	11 59	—0 74
10	6	4 42	4	6 84	—2 42	31	5	9 58	4	12 13	—2 5
11	6	3 98	4	6 95	—0 97	I b ry 1	5	9 69	3	11 31	—1 62

INDEX ERROR OF THE MURAL CIRCLE (Continued)

1840	N b	I d Err by Star	N b	I d Lrr by R fl t g C l l t	D ff	1840	N b	I d F by St	N b	I d E ly R fl t g C l l m t	D ff re
F bru y 2	6	+0 10 66	3	+0 11 31	—0 65	M y 18 19	5	+0 18 03	5	+0 18 71	—0 48
3	6	9 21	4	12 14	—2 93	20 03	11	17 78	11	18 45	—0 67
4	5	11 73	8	11 00	+0 73	24 29	15	17 07	1	18 46	—1 19
5	8	10 46	4	10 92	—0 46	30	4	17 46	4	18 18	—0 72
6	6	11 23	3	11 34	—0 11	Ju 2	4	18 25	4	18 62	—0 37
7	5	11 03	4	11 30	—0 27	4 5	5	18 07	5	18 56	—0 49
8 9	7	10 95	7	11 23	—0 28	6	3	17 99	3	18 29	—0 30
10	6	10 78	4	11 54	—0 76	7 8	5	18 10		18 69	—0 59
11 12	7	10 37	6	11 53	—1 15	23 2	9	18 21	9	18 41	—0 20
13 14	10	10 42	7	10 91	—0 49	26 J ly 1	17	18 50	17	18 88	—0 29
15	8	10 39	4	11 32	—0 93	2	3	18 91	3	18 39	+0 52
16 17	8	10 40	8	11 62	—1 2	4 23	53	18 75	53	18 38	+0 37
18 19	9	12 18	8	11 98	+0 20	28 30	7	18 56	7	18 04	+0 52
20	5	12 27	4	1 0	+0 20	31 Au 10	25	18 34	2	18 37	—0 03
21	6	12 27	4	12 03	+0 24	11 15	12	17 45	1	18 28	—0 83
22 23	8	11 94	7	12 22	—0 28	20 S pt 16	71	17 43	71	18 11	—0 68
24	6	11 66	4	12 34	—0 68	29	3	19 07	3	19 14	—0 07
25 26	8	12 93	7	14 12	—1 19	30	3	19 25	3	19 11	+0 14
27	5	12 65	4	13 82	—1 17	O t b r 1	3	18 33	3	18 78	—0 45
28	6	12 98	4	13 33	—0 35	2	3	18 75	3	18 68	+0 07
29	6	12 64	3	13 05	—1 01	3	6	18 72	2	18 59	+0 13
M 1	1	11 99	4	14 06	—2 07	4	5	18 37	3	18 46	—0 09
2	5	11 20	4	13 2	—2 02	5 6	6	17 70	4	19 26	—1 56
3	5	11 29	3	13 23	—1 94	7	6	19 12	3	18 60	+0 52
4	7	11 70	4	14 28	—2 8	8 9	6	18 23	5	18 47	—0 24
5 6	6	11 31	7	13 20	—1 80	12		19 31	3	18 92	+0 39
7 8	9	11 70	7	14 42	—2 72	12 16	6	19 37	1	18 70	+0 67
9 10	8	12 42	6	13 67	—1 25	17	4	20 07	2	18 44	+1 63
11 12	8	11 84	8	13 32	—1 18	18 19	6	18 97	7	18 91	+0 06
13	7	12 77	4	14 77	—2 00	21 22	8	18 67	6	19 24	—0 7
15	6	13 36	4	14 28	—0 92	24 31	4	18 02	22	19 07	—0 55
16	5	13 57	4	14 75	—1 18	N v 18 19	6	27 19	6	26 52	+0 67
17	5	12 80	3	15 20	—40	21 22	6	27 74	6	27 20	+0 54
18	6	12 70	4	14 78	—2 08	23	5	28 02	4	28 08	—0 06
19	5	13 48	4	14 78	—1 30	Dec 3 5	8	22 12	3	25 08	—2 96
20	5	12 91	3	15 30	—2 39	6 12	6	21 70	21	23 39	—2 19
21 22	6	13 79	7	15 05	—1 26	15 17	6	21 02	9	21 61	—0 59
23	5	13 47	4	14 97	—1 50	18 19	5	20 42	5	21 72	—1 30
24	5	12 88	4	14 91	—2 03	1841					
25 26	9	13 07	7	15 38	—2 31	J y 2 3	8	16 22	4	16 75	—0 53
27	7	13 83	4	15 7	—1 93	4	4	15 65	2	18 19	—2 54
28	5	13 5	3	15 66	—2 14	5	8	14 90	2	16 85	—1 95
29	6	13 44	4	15 58	—2 14	9 16	8	17 70	19	17 76	—0 06
30	3	13 87	3	15 22	—1 35	17 19	9	17 78	10	17 98	—0 20
31	3	13 72	4	15 37	—1 65	20	6	17 83	3	17 04	+0 79
Ap l 1	4	13 55	4	15 31	—1 76	21	4	17 35	3	17 93	—0 8
2	6	14 08	4	15 04	—0 96	22	6	16 15	4	16 28	—0 13
3 6	7	13 58	12	1 71	—2 13	23	4	16 73	2	18 63	—1 80
7 8	6	13 13	6	15 71	—2 8	27 29	6	16 40	9	17 78	—1 38
9	5	14 23	4	15 76	—1 53	30 31	6	15 72	5	17 53	—1 81
10 13	8	13 84	11	16 31	—3 47	Feby 1	11	16 20	7	17 32	—1 12
14 16	5	15 78	7	14 93	+0 85	3	5	15 83	2	17 10	—1 27
21 23	6	16 01	10	15 71	+0 30	4 5	5	14 64	6	17 20	—2 58
24 25	4	16 78	4	1 92	+0 86	6	6	14 69	3	16 37	—1 68
26 M y 2	17	16 77	17	15 72	—1 05	7	3	15 89	3	16 41	—0 55
14 16	9	18 23	9	17 24	+0 99	8	6	1 54	4	16 6	—1 02

INDEX ERROR OF THE MURAL CIRCLE											
1841	N b	I d L by Sta	N b	I d E by R fl t g C ll m t	D ff	1841	N b	I d L by Sta	N b	I d L by R fl t g C ll t	D ff
F by	9	6				O t b	16	4			
	10	4					18	4			
	11	5					19	3			
	12	5					27	7			
	18	6				N v mb	3	12			
	19 20	6					6	8			
	22 23	7					7	13			
	24 25	8					10	4			
26 M	h 1	6					12	7			
	3 7	11					14	6			
	9	3					15	3			
	11 12	5					16	10			
	13 15	5					17	7			
	17 18	6					18	5			
	19	3					19	5			
	21	5					20	5			
	22	5					21	3			
	28 24	4					22	3			
	25	7					30	6			
	26	4				D ml	2	5			
	27	3					4	7			
	28 29	4					7	6			
	30	4					6	6			
Apr 1	2	9					7	11			
	3	7					8	10			
	4	7					11	9			
	5 7	7					12	6			
	8 13	5					13	8			
	17	4					14	4			
	18 19	5					17	4			
	20 21	7					18	4			
	22 27	8					17				
M y	5 7	9					20				
Jun	9 10	8					21	1			
	15	21					23	9			
	16 26	16					24	11			
28 J ly	14	4				1842					
28 A g	8	10				J y	5	7			
	7	8					6	10			
	8	5					13				
	9 16	8					11				
	21 22	8					9	13			
	28	8					10	8			
	29	7					13 14	10			
	30	12					15 21	11			
	31	9					22	7			
S pt	1	8					23	4			
	6 7	5					25	8			
	8 9	6					26	8			
	13 14	6					27	7			
	15 18	8					28	6			
	20 28	11					29	7			
S pt	24 29	9					31	6			
O t b	6	9				T by	1	2			
	8	6					3	5			
	15	5					4	9			

INDEX ERROR OF THE MURAL CIRCLE (Continued)

1842	N b	I d Err by Sta	N b	I d Err by Refl C l l m t	D i f f	1842	N b	I d Err by St	N b	I d Err by Refl C l l m t	D i f f
February 5	10	+0 17 44				April 27	10	+0 21 19			
6	7	18 29				28	8	21 71			
7	7	17 45				29	9	20 45			
8	7	18 30				30	8	20 87			
9	8	18 87				May 1	7	21 25			
10	9	18 45				4	4	23 79			
11	10	18 59				8	4	23 70			
12	8	17 83				8	8	31 65			
13	10	18 35				10	10	31 18			
14	11	18 49				11	8	31 0			
15	13	17 94				17	6	3 61	2	+0 33 70	-1 09
16	12	18 45				18	6	32 20	3	35 00	-2 80
18	7	16 83				20	5	31 70	3	34 25	-2 55
19	10	16 78				22	6	31 72	4	33 46	-1 74
21	9	16 78				23	6	3 02	4	33 06	-1 01
22	25	17 61				24	5	31 46	3	33 71	-2 25
26	27	17 03				27	8	30 63	4	32 85	-2 22
8 March 1	9	17 94				June 3	6	31 14	14	33 11	-1 97
2	7	18 20				8	8	31 56	3	33 60	-0 04
3	9	18 22				17	5	31 79	3	32 6	-0 77
4		17 19				19	5	34 27	3	33 35	+0 32
5	6	17 78				20	21	31 82	7	33 22	-1 40
8	10	17 98				22	23	31 88		33 49	-1 61
9	8	18 16				24	7	32 21	3	33 17	-0 96
11	7	18 16				27	28	32 69	7	32 78	-0 09
12	7	18 18				29	30	32 62	7	32 82	-0 20
14	7	18 76				July 1	6	31 61	16	33 92	-1 31
15		18 07				8	11	31 29	12	32 90	-1 61
17	8	18 78				19	20	31 83	8	32 10	-0 27
18	9	18 21				21	26	32 47	19	32 73	-0 26
21	9	18 3				Aug 1	6	32 20	10	32 2	-0 12
23	9	18 00				7	8	31 73	7	31 75	-0 02
24	9	18 74				9	12	33 08	10	31 90	-1 18
25	26	18 33				13	5	31 48	2	31 70	-0 22
27	5	17 86				14	15	3 33	6	31 80	+0 53
28	5	18 47				16	21	30 02	17	31 33	-1 31
30	8	18 72				22	23	28 33	5	30 99	-2 66
31	7	18 88				24	6	29 71	3	31 33	-1 62
April 1	7	19 29				27	31	27 69	14	29 64	-1 95
2	8	18 51				Sept 2	4	29 15	7	29 71	-0 56
4	12	19 14				6	7	28 41	6	30 09	-1 68
5	9	18 97				8	5	28 56	2	30 11	-1 55
6	9	18 83				9	7	29 40	3	30 10	+0 80
7	8	19 26				10	4	29 92	2	29 61	+0 81
8	9	19 03				11	6	28 09	4	28 97	-0 88
9	8	19 21				12	6	27 48	3	28 98	-1 60
11	11	19 58				13	14	29 42	6	29 30	+0 12
12	8	20 24				15	8	28 0	3	29 35	-1 33
14	2	19 6				16	6	27 92	4	28 58	-0 66
15	7	19 60				17	5	28 40	3	28 88	-0 48
16	6	20 79				18	5	27 35	3	28 78	-1 43
18	8	20 00				19	5	26 01	3	28 44	-2 43
20	6	20 30				21	5	28 51	3	28 41	+0 10
23	11	20 56				22	24	29 20	7	28 56	+0 64
25	11	20 97				27	6	29 96	4	28 10	+1 86
26	9	20 5				28	30	29 07	7	27 97	+1 10

INDEX ERROR OF THE MURAI CIRCLE (Continued)

1842	N _f ob	I d l by Sta	N _b	I d Err by Refl t g C l l m t	D ff	1842	N _f l	I d l by Sta	N _b	I d E by Refl t g C l l t	D ff
O to b	1	13	+0	29 41	3	+0	27 78	+1 63			
2	3	8		28 03	8		28 01	+0 02			
	4	8		30 40	3		8 10	+ 30			
	5	7		29 09	4		28 10	+0 99			
	6	4		29 84	4		27 85	+1 99			
	7	6		28 47	4		28 02	+0 45			
	8	6		30 31	3		27 66	+2 65			
	9	7		29	3		27 87	+1 88			
	10	9		30 1	3		28 10	+ 05			
	11	9		29 93	3		28 00	+1 93			
	12	6		29 39	4		27 80	+1 59			
	13	7		29 65	3		28 28	+1 37			
	14	10		9 41	3		28 40	+1 01			
	15	8		30 10	3		28 09	+2 01			
	16	9		29 51	4		28 27	+1 24			
	17	7		28 36	4		8 46	—0 10			
	18	8		29 28	4		28 49	+0 79			
	19	10		29 37	4		27 92	+1 45			
20	21	8		29 11	4		28 05	+1 06			
	22	9		28 88	3		28 13	+0 75			
25	26	6		29 39	5		28 01	+1 38			
	27	6		30 82	4		28 50	+2 32			
	28	7		29 56	4		29 27	+0 29			
29	30	6		29 47	4		28 77	+0 70			
N vr	1	7		31 17	3		28 75	+2 42			
2	3	6		30 16	6		29 18	+0 98			
	4	4		31 01	3		28 83	+2 18			
	5	6		31 12	2		30 45	+0 67			
11	12	7		33 36	6		34 00	—0 64			
	13	6		31 48	3		33 49	—2 01			
	15	4		32 65	3		33 44	—0 79			
	17	6		32 71	4		33 99	—1 28			
	18	5		33 35	4		33 39	—0 04			
	19	6		32 49	3		32 98	—0 49			
	20	8		32 35	4		33 31	—0 96			
	21	4		32 95	3		33 23	—0 28			
	22	7		31 81	4		3 64	—0 83			
	23	7		32 87	3		31 98	+0 89			
2	7			32 78	4		32 38	+0 40			
26	8			3 26	4		31 90	+0 36			
27	6			3 53	4		32 62	—0 09			
28	9			32 07	3		3 84	—0 77			
29	9			31 68	3		32 45	—0 77			
30	8			31 08	4		32 14	—1 06			
D emb r l	4			31 25	4		31 41	—0 16			
2	11			30 38	3		31 56	—1 18			
3	10			30 00	3		31 98	—1 98			
4	12			29 67	4		30 90	—1 23			
5	8			30 55	3		31 31	—0 76			
6	13			29 22	4		30 99	—1 77			
7	10			29 95	4		31 16	—1 21			
8	6			29 32	3		30 76	—1 44			
9	4			29 56	3		30 54	—0 98			
12	12			29 61	4		30 84	—1 23			
13	7			29 39	4		31 09	—1 10			
14	9			31 07	4		30 72	+0 35			
D	16	10	+0	29 92	4	+0	30 54	—0 62			
	17	10		30 63	3		31 19	—0 7			
	18	14		30 11	4		31 02	—0 91			
	19	14		29 2	4		30 81	—1 0			
	20	8		30 06	3		31 20	—1 14			
	21	13		29 11	4		31 3	— 24			
	22	1		29 07	4		31 0	—1 98			
	23	16		29 93	4		31 0	—1 14			
	24	10		29 77	4		31 13	—1 36			
	25	11		29 04	4		31 2	— 18			
	26	7		28 48	3		31 35	—2 87			
	27	8		28 04	4		31 01	— 97			
	28	10		29 90	4		30 84	—0 94			
	29	31	9	28 72	9		30 66	—1 94			
1843											
J ry	3	11		26 37	3		30 7	—4 20			
	4	14		28 23	4		29 77	—1 51			
	5	13		27 98	4		30 21	—2 23			
	6	7		27 86	3		30 30	—2 44			
	7	9	12	27 10	9		29 8	—2 7			
	10	11	12	27 83	6		29 99	—2 16			
	12	17	14	27 96	21		29 8	—1 89			
	18	20	11	29 13	8		29 80	—0 67			
	21	12		29 79	3		29 83	—0 04			
	22	12		30 06	5		29 88	+0 18			
	23	10		28 97	3		29 97	—1 00			
	24	25	10	28 77			29 77	—1 00			
	26			28 71	2		29 63	—0 92			
	27	11		29 59	3		30 19	—0 70			
	28	12		29 14	3		29 93	—0 79			
	29	13		30 30	4		30 06	+0 24			
	30	14		29 31	5		30 16	—0 8			
	31	13		29 22	4		30 72	—1 50			
F b y 1	7			29 03	3		31 13	—2 10			
	12			29 00	4		30 69	—1 69			
	3	13		28 29	4		30 31	—2 0			
	4	9		28 87	3		30 6	—1 69			
	5	6	6	29 04	6		30 43	—1 30			
	7	13		27 83	4		30 21	—2 43			
	8	15		27 98	4		30 33	—2 35			
	9	12		27 57	3		30 07	—2 0			
	10	12		27 78	4		30 07	—2 29			
	11	12		28 23	3		30 44	—2 21			
	12	10		28 15	3		29 86	—1 71			
	13	14		26 78	4		30 47	—3 60			
	14	14		27 07	3		30 12	—3 0			
	15	12		27 77	4		30 45	— 68			
	16	10		27 25	4		29 98	— 73			
	17	10		26 38	4		30 32	—3 94			
	18	8		27 04	3		30 34	—3 30			
	19	9		26 95	2		29 91	— 96			
	20	12		27 07	4		29 75	—2 68			
	21	13		26 23	3		29 17	—2 94			
	22	12		25 71	3		28 43	—2 72			
	23	11		26 32	4		28 27	—1 9			
	24	12		26 49	4		28 65	—2 16			

INDEX ERROR OF THE MURAL CIRCLE (Continued)

1843	N b	I d Err by Star	N ob	I d Err by Refl t g C l l m t	D f	1843	N b	I d Err by Star	N b	I d Err by Refl t g C l l m t	Differ
Febru y 25	8	+0 25 73	3	+0 28 47	-2 74	My 14 18	12	+0 25 43	12	+0 26 87	-1 44
26	10	26 03	4	28 38	-0 35	24 30	12	31 12	13	32 28	-1 16
27	13	25 43	4	28 41	-2 98	31	7	32 88	2	31 47	+1 41
28	12	26 74	4	28 55	-1 81	Je 1	7	32 23	3	31 46	+0 77
M ch 1	11	27 77	4	28 12	-0 35	2	9	32 73	4	33 19	-0 46
2	12	27 14	4	28 39	-1 25	3	7	32 43	4	33 07	-0 64
3	12	6 58	4	28 65	-2 07	4 7	11	33 20	11	33 95	-0 75
4	8	26 51	3	8 21	-1 70	8 9	8	32 67	7	34 68	-2 01
5	12	27 27	3	28 23	-0 96	10 11	7	33 65	5	34 49	-0 84
6	7	27 79	3	28 30	-0 51	12 16	12	33 82	15	34 37	-0 55
7	8	26 42	4	28 58	-1 16	17	8	34 41	4	34 41	-0 00
8 9	9	27 60	5	28 27	-0 67	21	8	33 60	4	34 59	-0 99
10 11	7	26 79	2	28 47	-1 68	23 26	7	33 96	10	35 18	-1 22
12	8	26 61	3	28 44	-1 83	27 28	9	33 56	5	34 72	-1 16
14	6	26 57	3	28 70	-2 13	29	5	31 08	3	34 80	-3 72
15	4	26 56	3	28 31	-1 75	30 July 1	7	30 52	6	34 01	-3 49
16	8	27 13	3	28 42	-1 29	21 27	8	33 78	19	33 91	-0 13
17 18	11	27 03	5	28 56	-1 53	August 1	7	31 69	3	33 98	-2 29
19	7	27 23	4	28 38	-1 15	3 14	14	32 49	35	34 31	-1 82
20	7	27 88	2	28 71	-0 83	22	15	32 52	4	34 19	-1 67
21	6	27 28	3	28 76	-1 48	23	13	33 66	4	33 91	-0 25
24	11	24 41	3	26 57	-2 16	25 29	17	33 30	3	33 97	-0 67
25	8	25 04	2	25 65	-0 61	S pt 1 6	11	34 99	7	34 95	+0 04
26 27	9	23 38	6	27 30	-3 92	7 9	18	33 67	0	34 95	-1 28
28 30	15	23 65	11	26 55	-2 90	10 12	12	33 13	9	33 63	-0 50
31	10	21 77	3	26 36	-4 59	13	15	33 68	4	33 92	-0 24
April 1	8	23 54	2	25 75	-2 21	14	15	32 01	3	34 05	-1 14
4 5	12	23 61	7	25 89	-2 29	15 17	8	33 21	10	34 19	-0 93
6	8	22 67	3	26 46	-3 79	18	11	32 36	4	34 55	-2 19
7	9	23 11	3	26 61	-3 50	19	6	33 40	4	33 73	-0 33
8	8	24 16	3	26 80	-2 64	20	5	33 32	3	34 01	-0 69
9	8	23 10	1	26 85	-3 75	21	5	32 35	3	34 17	-1 82
10	9	22 77	3	26 85	-4 08	22	7	31 67	3	33 49	-1 82
11 12	9	23 31	7	26 49	-3 19	23	12	32 50	3	34 06	-1 54
13	8	23 50	3	26 37	-2 87	24	9	32 10	4	33 92	-1 82
14	10	23 28	3	26 59	-3 31	25	13	32 23	4	33 48	-1 25
15	8	23 23	3	26 47	-3 24	26	7	32 20	3	33 33	-1 13
16	8	23 39	3	26 76	-2 87	28	17	32 21	4	33 92	-1 71
17	6	23 76	4	26 89	-3 13	29	13	32 66	4	33 39	-0 73
18	8	23 87	4	26 67	-2 80	30	12	31 64	3	33 44	-1 80
20 21	9	23 98	6	26 31	-2 33	O t ber 1	4	33 95	3	33 11	+0 84
22	8	23 34	3	26 17	-2 83	2	11	33 40	4	33 15	+0 25
23	6	24 41	4	27 04	-2 63	3	6	32 85	3	33 19	-0 34
26	8	24 50	3	26 26	-1 76	4	12	32 72	4	33 52	-0 80
27	9	24 72	3	26 36	-1 64	5 6	6	33 48	6	33 31	+0 17
28	7	24 61	3	26 50	-1 89	7	5	34 45	3	33 54	+0 95
29	7	24 59	2	26 50	-1 91	11	8	34 10	2	34 11	-0 01
30	7	25 15	2	26 74	-1 59	12	14	33 61	4	34 24	-0 63
May 1	8	23 48	2	26 33	-2 85	13	11	33 81	4	33 60	+0 21
2	6	25 87	4	26 62	-0 7	14	1	33 44	3	33 53	-0 09
3	6	25 18	4	26 42	-1 24	15	7	34 48	3	33 47	+1 01
4	8	25 71	4	26 92	-1 21	17	9	33 97	4	33 77	+0 20
5 6	9	25 25	6	26 38	-1 13	18	8	34 75	3	33 44	+1 31
7	6	24 72	3	26 70	-1 98	19	7	-1 1 99	3	-1 4 83	+2 84
8 9	10	25 29	6	27 08	-1 79	20 21	4	53 04	4	-0 50 80	-2 24
11 13	9	24 64	9	27 67	-3 03	22	10	53 43	4	53 16	-0 27

INDEX ERROR OF THE MURAL CIRCLE													
1843	N b	I d Err by Stars	N b	I d Err by R f t g C l l m t	Diff	1844	N b	I d Err by St	N b	I d Err by R f t g C l l m t	Diff		
O to b	23	8	—0 53 65	3	—0 51 28	— 37	J a u y	18	13	—0 55 31	3	—0 52 73	— 58
	24	12	54 06	4	52 61	—1 45		19	17	54 14	4	51 2	—2 62
	25	12	54 27	4	52 14	—2 13		20	17	51 53	3	51 90	—2 63
	26	7	54 54	3	50 60	—3 94		21	16	51 55	4	53 31	—1 4
	31	5	53 15	3	52 23	—0 92		22	7	54 13	3	52 34	—1 79
Novembe	2	11	53 03	4	54 41	+1 38		3	17	54 42	4	53 51	—0 88
	3	10	54 04	3	53 24	—0 80		24	19	54 77	4	52 79	—1 98
	4	11	53 45	3	51 90	—1 55		25	20	55 25	4	53 78	—1 47
	5	6	54 19	8	51 67	—2 52		26	20	57 36	4	4 98	—2 38
	7	5	53 07	4	51 40	—1 67		27	14	57 64	4	55 42	—2
	8	6	53 91	4	51 62	—2 29		28	15	57 37	4	56 49	—0 88
	9	11	52 94	8	51 75	—1 19		29	5	57 77	3	53 44	—4 33
	12	14	51 82	9	50 94	—0 88	30 F by	2	15	50 07	13	49 92	—0 15
	15	7	51 85	4	50 55	—1 30		3	5	51 73	3	50 51	—1 2
	16	8	52 95	4	51 64	—1 31		4	11	50 87	5	48 03	— 84
	17	12	53 43	4	51 67	—1 76	5	6	10	49 63	5	49 22	—0 41
	18	13	51 05	3	51 40	—2 65		7	12	50 75	4	50 30	—0 45
	19	11	54 57	4	51 90	—2 67		8	11	51 31	3	49 0	—1 61
	20	22	53 74	9	52 08	—1 66		9	9	52 21	3	49 32	—2 89
	23	10	54 07	3	52 06	—2 01		10	8	53 96	3	51 7	—2 39
	24	12	53 72	4	52 31	—1 41		11	11	52 18	3	49 06	—3 07
	25	26	53 65	6	51 16	—2 49	12	13	9	5 24	5	49 53	—2 71
	27	12	54 50	3	51 18	—3 32		14	6	53 01	4	49 65	—3 36
	28	15	54 32	4	2 43	—1 89		15	10	52 82	4	50 06	—2 76
	29	30	53 64	6	52 42	—1 22		16	12	51 47	4	49 60	—1 87
December	7	5	51 18	3	49 45	—1 73		17	8	51 85	3	49 35	—1 90
	9	11	48 99	3	48 53	—1 46		18	15	51 76	4	49 87	—1 89
	10	8	50 25	4	47 81	—2 44		19	12	54 40	4	51 12	—3 28
	12	8	51 00	4	48 72	—2 28		20	14	53 96	4	51 01	—2 9
	13	14	51 96	7	49 70	—2 26		21	14	53 84	4	50 57	—3 27
	15	9	52 67	3	49 01	—3 66		22	12	54 20	4	51 26	—2 94
	16	17	53 43	6	49 60	—3 83		23	13	54 31	4	50 50	—3 81
	18	15	53 74	4	0 38	—3 36		24	10	53 9	4	0 31	—3 61
	19	20	3 41	6	50 60	—2 81		25	11	54 02	4	50 41	—3 61
	21	11	53 99	4	50 36	—3 63		26	9	53 66	4	0 77	—2 89
	22	13	54 29	4	52 52	—1 77		27	6	54 37	4	51 36	—3 01
	23	24	54 31	5	51 36	—2 95		28	9	53 18	4	51 01	—2 17
	26	15	54 11	4	51 88	—2 23		29	9	54 87	4	51 28	—3 59
	27	16	54 30	4	51 96	—2 34	M a h	1	10	54 33	4	51 99	—2 34
	28	29	55 27	7	51 45	—3 82		2	11	54 01	3	51 84	—2 17
	30	31	53 62	6	51 48	—2 14		3	14	52 07	4	0 20	—1 87
1844								4	17	52 92	4	51 56	—1 36
J n y	1	2	51 99	5	52 42	+0 43		5	11	52 91	4	51 56	—1 35
	3	15	3 45	4	52 01	—1 41		6	16	52 68	4	50 68	—2 00
	4	11	53 01	3	51 76	—1 25		7	14	52 43	4	49 90	— 53
	5	15	52 95	4	52 10	—0 85		8	11	52 99	4	50 86	—2 13
	6	13	53 71	3	52 15	—1 56		9	10	52 40	3	50 53	—1 87
	7	14	54 05	4	5 40	—1 65		10	9	53 11	4	50 26	—2 85
	8	16	53 72	4	51 59	—2 13		11	12	53 47	4	50 76	—2 1
	9	16	54 42	4	52 36	—2 06		12	9	54 20	4	50 86	—3 34
	10	14	54 83	4	52 88	—1 95		13	9	53 0	4	51 86	—1 34
	11	16	4 63	4	52 83	—2 30		14	7	2 88	4	51 16	—1 72
	12	17	56 25	4	52 41	—3 84		15	9	51 90	4	51 13	—0 77
	13	11	55 41	3	51 81	—3 60		16	7	52 09	3	51 02	—1 07
	14	16	54 37	8	51 17	—3 20		17	12	52 04	4	51 37	—0 67
	17	15	55 55	4	51 96	—3 59		18	11	52 13	4	51 62	—0 51

INDEX ERROR OF THE MURAL CIRCLE (Continued)

1844	N b	I d Er by St	N b	I d Er by Ref t g C Ill m t	D ff	1844	N b	I d Er by St	N b	I d Er by Ref t g C Ill m t	D ff
M cl 19	11	-0 52 11	4	-0 50 61	-1 50	M y 22 23	9	-0 53 81	7	-0 0 52	-3 29
20	11	52 40	4	51 05	-1 35	25	6	53 15	3	49 15	-3 70
21	12	52 36	4	51 44	-0 9	26	9	52 01	3	49 07	-2 94
22	8	52 05	2	50 75	-1 30	28	3	52 82	2	50 11	-2 71
23	11	53 00	3	50 99	-2 01	29	3	4 47	1	50 33	-4 14
24 25	8	52 33	6	50 94	-1 39	30	8	53 01	4	50 16	-2 85
26	9	53 66	4	49 73	-3 93	31	10	2 5	4	49 26	-3 29
27	4	53 16	4	50 58	- 8	J ne 1	7	51 63	4	49 09	-1 94
28	7	53 45	4	50 82	-2 63	2 3	9	52 38	6	50 27	-2 11
29	5	53 66	4	50 19	-3 17	4	4	1 7	3	49 69	-2 03
30	9	52 85	3	50 2	-2 33	5	7	51 31	4	48 96	-2 3
31	11	52 68	3	50 76	-1 92	6	6	51 75	4	49 62	-2 13
Ap l 1	10	52 56	4	50 49	-2 07	7	3	51 91	3	0 20	- 74
2	10	52 78	4	50 19	-2 59	8	7	50 44	3	50 16	-0 28
3	7	52 49	3	50 76	-1 73	9	8	51 94	4	49 03	-2 01
4	10	52 90	4	50 86	-2 04	10	9	51 96	4	50 34	-1 62
5	5	52 91	4	50 21	-2 73	12	7	51 96	4	49 84	-2 12
6	6	52 48	3	50 95	-1 53	18	6	51 94	4	49 61	-2 33
7	10	53 85	4	50 91	-2 94	14	6	51 48	4	49 73	-1 75
8	3	54 7	3	50 54	-4 18	15	9	51 63	3	49 86	-1 77
9	10	5 84	4	50 39	-2 45	18	9	5 38		50 62	-1 76
10	10	53 32	4	49 98	-3 34	19	8	5 08		51 1	-0 93
11	11	52 98	4	50 30	-2 68	23 24	4	52 92	7	50 23	- 69
12	9	53 37	4	51 10	-2 27	2 7	11	2 76	9	50 71	- 0
13	9	53 24	4	50 76	-2 48	28 29	4	52 89	6	50 56	-2 33
14	8	53 88	4	50 53	-3 15	July 1	3	2 48	9	50 60	-1 88
15	8	3 97	4	50 11	-3 86	4 5	10	5 28	7	50 28	-2 00
16	9	53 86	4	50 43	-3 43	11 15	10	52 44	7	51 63	-0 81
17	8	54 06	4	51 06	-3 00	17	10	52 89	3	50 3	-2 54
18	8	54 13	4	51 21	-2 9	20	5	51 81	2	50 56	-1 25
19	8	54 07	4	51 54	-2 53	23	8	51 13	3	49 50	-1 63
20	10	53 97	4	0 70	-3 27	2 6	4	51 99	4	49 86	-1 43
21	10	53 82	4	51 41	-2 41	27 28	8	51 27	5	49 77	-1 50
2	11	53 64	4	50 40	-3 24	Augu t 2	3	53 23	3	51 71	-1 52
23	9	53 68	4	50 99	-2 79	4 5	6	51 92	7	0 40	-1 59
24	12	52 81	4	51 63	-1 18	6 7	4	53 91	6	51 20	-2 71
25	10	52 99	4	51 39	-1 60	9 10	5	51 99	6	52 47	+0 48
26	12	52 92	4	51 36	-1 56	14 15	8	50 87	7	50 77	-0 10
27 28	10	53 51	7	51 12	-2 39	16	15	51 63	4	51 01	-0 62
29	5	5 94	4	51 74	-1 20	17	5	51 64	3	51 08	-0 56
30	12	51 59	4	51 12	-0 47	18	9	52 06	3	51 28	-0 78
M y 1	9	52 22	4	50 58	-1 64	19	7	51 74	3	0 83	-0 91
8	12	52 46	4	51 38	-1 08	20	4	52 18	4	51 17	-1 01
4	12	53 22	3	50 94	-1 82	23	7	52 84	3	0 77	-2 07
5	6	53 32	3	51 25	-2 00	24 25	6	1 59	5	51 18	-0 41
6	8	53 47	3	50 26	-3 21	26	2	51 90	3	50 08	-1 82
9	5	53 95	3	50 83	-3 12	30 31	13	51 38	5	51 60	+0 22
10	8	52 47	4	50 93	-1 54	S pt 5 6	1	51 24	6	50 59	-0 65
11	4	52 49	2	50 51	-1 98	7	11	51 34	3	50 51	-0 83
12	10	52 43	3	50 13	-2 30	9	4	51 02	3	49 94	-1 08
13	10	53 95	3	51 05	-2 90	10	18	51 68	4	49 51	-2 17
14	10	53 06	3	50 68	-2 38	11	16	51 05	4	49 87	-1 18
15 16	6	53 60	6	51 27	-2 33	12	10	51 18	3	49 45	-1 73
17	5	52 93	3	50 81	-2 62	13 15	4	51 08	6	50 37	-0 71
18 19	12	5 10	7	51 08	-1 02	16 17	18	50 08	6	50 17	+0 09
						18 19	15	50 04	6	49 05	-0 99

INDEX ERROR OF THE MURAL CIRCLE (Continued)

1844	N b	I d Err by St. s.	N b	I d Err by R. fl. t. g. C. ll. m. t.	Diff	1844	N b	I d E by Star	N b	I d E by R. fl. t. g. C. ll. m. t.	Diff
Sept 20	9	—0 50 03	3	—0 0 71	+0 68	Nov mb 25	6	+0 32 19	4	+0 33 93	—1 14
21	14	48 10	3	49 40	+0 10	26 27	13	32 11	7	33 24	—1 13
22	12	48 46	4	49 9	+1 13	28	13	31 09			
23	6	48 41	3	48 25	—0 16	29	8	30 83	2	32 49	—1 66
24	14	48 17	3	48 66	+0 49	30	10	31 08	3	32 51	—1 43
25	11	48 70	3	48 45	—0 25	D c mb 1	9	30 50	4	3 62	—2 12
26	10	48 37	3	48 2	—0 12	2	13	31 90	4	3 40	—0 50
7	11	49 11	3	48 28	—0 83	3	14	30 53	4	3 09	—1 6
28	14	0 2	3	48 68	—1 84	4	13	31 42	4	32 36	—0 94
29	13	50 37	3	49 08	—1 29	5	9	31 58	5	32 77	—1 19
30	18	50 04	4	48 30	—1 74	6 9	6	32 90	8	33 45	—0 5
Octobe 1	14	50 31	4	48 79	—1 52	10	9	32 02	4	3 61	—0 59
2	13	49 50	4	48 26	—1 24	11	11	32 89	4	34 01	—1 12
3	16	49 87	4	48 12	—1 5	12	12	32 88	4	33 88	—1 00
4	5	30 31	3	28 61	—1 67	15	8	33 72	4	33 74	—0 02
6 9	4	+0 35 63	11	+0 33 4	+2 01	16	2	35 35	2	34 70	+0 65
10 11	15	33 81	7	33 23	+0 58	21	7	40 3	3	39 08	+1 27
12	6	34 72		34 86	—0 14	22 24	8	40 13	9	42 01	—1 88
14	6	33 90	3	33 41	+0 49	1845					
15	4	34 28				J u ry 1 2	7	49 07			
16 17	10	33 41	3	34 00	—0 59	4	12	14 35		13 70	+0 65
18	13	33 77	3	33 77	0 00	5	17	15 80		1 44	+0 36
19 20	13	32 17	5	34 57	—1 80	6	11	16 10	3	16 27	—0 17
21	11	32 46	3	34 09	—1 63	7	7	16 20	4	16 84	—0 64
22	14	33 00	2	35 14	—2 14	8	8	15 33	4	16 28	—0 95
23	11	33 00	3	33 05	—0 05	9	12	15 83	4	1 70	+0 13
24	14	32 41	3	31 83	+0 8	10	11	15 79	4	1 2	+0 57
25	15	32 98	4	32 87	+0 11	11	11	14 69	3	14 96	—0 7
26	12	33 34	4	32 59	+0 75	12	13	14 64	4	15 15	—0 1
27	11	32 48	4	33 08	—0 60	13	6	14 29	4	14 90	—0 61
28	10	32 68	3	32 19	+0 44	14	8	13 44	3	14 11	—1 47
29	12	32 70	4	32 31	+0 39	15	12	1 99	4	13 33	—0 34
30	15	32 51	4	33 85	—1 34	16	11	12 88	4	12 45	+0 03
30 Nov 1	15	32 84	8	32 45	+0 39	17	10	11 85	3	11 90	—0 06
2	6	32 91	2	33 41	—0 50	18	10	11 18	3	12 44	—1 26
3	16	33 4	4	33 92	—0 50	19	11	11 16	3	12 01	—0 85
4	11	32 52	4	34 26	—1 74	20	11	11 38	4	13 14	—1 76
5	10	33 51	4	35 62	—2 11	21	6	10 11	4	1 1	—2 40
6	8	33 12	3	35 21	—2 09	22	19	10 78	4	11 32	—0 54
7	10	32 69	4	37 03	—4 34	23	17	10 16	4	11 42	—1 26
8	6	32 73	3	36 98	—4 25	24	15	9 7	4	9 75	—0 18
9	9	32 58	4	36 07	—3 49	2	11	9 34	3	9 61	—0 27
10	7	32 33	4	35 68	—3 35	26	8	8 68	3	9 63	—0 95
11	15	32 97	4	36 55	—3 58	27	10	9 30	4	9 74	—0 44
12	10	33 19	3	36 69	—3 50	28	9	8 03	2	9 24	—1 21
13	12	32 70	4	35 84	—3 14	29	11	8 60	4	8 84	—0 24
14	15	32 76	5	35 98	—3 22	30	9	8 52	4	8 57	—0 05
15	12	32 18	3	3 53	—3 35	31	15	8 24	4	8 38	—0 14
16	11	31 77	3	35 62	—3 85	Febru y 1	10	8 39	4	8 94	—0 55
17	10	32 32	3	35 17	— 85	2	5	7 50	4	8 06	—0 56
18	12	32 46	4	35 41	—2 95	3	6	8 01	4	8 39	—0 38
19	13	31 94	4	35 66	—3 72	4	10	7 90	3	8 11	—0 21
20	12	31 90	4	35 72	—3 82	5	11	6 34	3	7 20	—0 86
21	11	31 08	4	34 90	—3 82	6	9	6 18	4	7 16	—0 98
22	14	31 18	4	33 02	—1 84	7	8	5 43	3	5 65	—0 22
23 24	9	31 05	5	32 56	—1 51	8	11	6 26	4	6 32	—0 06

INDEX ERROR OF THE MURAL CIRCLE (Continued)

184	N b	I d E by Sta	N b	I d Err by R fl C l l m t	D ffe	184	N b	I d E by St	N b	I d Lrr by R fl C l l t	D ffe
F b u y 9	16	+0 5 93	4	+0 6 49	—0 56	Ap l 9	13	+0 7 50	4	+0 5 48	+2 02
10	16	5 5	4	89	—0 34	10	12	8 01	4	7 29	+0 72
11	14	4 81	4	5 65	—0 84	11	3	8 19	4	7 54	+0 65
12	11	3 80	4	6 10	—2 30	12	10	8 54	3	8 05	+0 49
13	13	4 42	4	4 85	—0 43	13	6	7 78	4	7 55	+0 23
14	9	3 14	3	5 13	—1 99	14	8	7 98	4	10 10	—2 12
15	9	3 36	4	3 99	—0 63	15	7	7 32	4	7 79	—0 47
16	8	3 53	4	2 97	+0 56	16	7	7 99	4	9 80	—1 81
17	9	3 16	4	3 94	—0 78	17	8	7 43	4	7 92	—0 49
18	10	3 07	4	3 98	—0 91	18	10	7 7	4	8 20	—0 4
19	10	3 13	4	3 58	—0 45	19	9	8 41	4	8 00	+0 41
20	14	2 92	4	3 62	—0 70	20	11	8 15	4	7 72	+0 43
21	10	3 00	4	3 28	—0 26	21	10	8 6	4	8 18	+0 44
22	11	2 38	4	2 91	—0 53	22	9	7 93	4	7 83	+0 10
23	14	1 84	4	2 77	—0 93	23	11	6 99	4	7 64	—0 65
24	13	1 48	4	0 70	+0 73	24	10	8 34	4	7 42	+0 9
25	13	1 45	4	1 09	+0 36	25	10	24 30	3	24 09	+0 21
26	16	1 45	4	0 90	+0	26	11	23 82	4	24 03	—0 21
27	13	1 15	4	0 84	+0 31	27	9	25 03	4	25 83	—0 80
28	13	0 98	4	1 36	—0 38	28	9	23 51	4	25 34	—1 80
M l 1	14	0 19	3	0 76	—0 27	29	11	24 45	4	24 85	—0 40
2	13	0 84	3	0 79	+0 05	30	9	22 1	4	23 67	—1 16
3	14	0 47	3	2 05	—1 8	M y 1	7	20 33			
4	14	1 43	3	3 10	—1 7	2	10	22 38	4	20 07	+0 31
5	10	2 12	3	2 05	+0 07	3	8	21 52	3	24 36	+0 16
6	16	3 16	4	2 74	+0 12	4	9	26 00	5	25 66	+0 34
7	14	3 28	4	1 69	+1 59	5	7	27 97	11	27 01	+0 96
8	11	1 69	3	0 31	+1 38	8	11	38 40	4	39 06	—0 66
9	14	1 78	4	1 04	+0 74	12	10	38 40		40 79	—2 30
10	11	2 01	4	1 93	+0 08	13	15	37 97	8	39 20	—1 3
11	10	2 77	4	1 82	—0 95	16	4	38 11	3	38 69	—0 5
12	10	1 11	4	0 73	+0 38	17	18	38 79	7	38 29	+0 0
13	6	1 49	3	2 19	—0 70	19	21	38 03	9	38 48	—0 4
14	16	1 69	9	1 60	+0 09	22	10	38 66	4	39 13	—0 47
17	9	1 88	3	1 30	+0 58	3	12	38 79	5	38 88	—0 09
18	19	1 67	8	1 40	+0 27	24	4	39 14	4	38 78	+0 36
20	10	1 79	5	1 4	+0 34	26	7	38 29	3	38 32	—0 03
21	1	1 10	5	1 77	—0 37	7	11	38 39	4	37 95	+0 44
22	5	1 74	2	1 15	+0 29	28	30	38 92	12	37 94	+0 98
23	12	2 48	5	1 23	+1 15	31	7	39 16	4	38 92	+0 21
24	10	2 7	3	1 01	+1 56	J n 1	9	3 73	4	38 77	—1 04
25	13	2 28	5	2 18	+0 10	2	9	38 11	4	38 38	—0 27
26	12	2 46	4	1 62	+0 84	3	11	38 72	4	37 97	+0 75
27	11	1 36	4	1 4	+0 42	4	9	39 45	4	38 49	+0 96
28	7	1 79	3	0 90	+0 89	5	7	38 47	3	38 37	+0 10
29	10	1 93	3	1 03	+0 90	6	11	38 29	4	38 61	—0 37
30	11	2 91	4	2 37	+0 54	7	9	38 18	3	38 22	—0 04
31	11	2 87	4	1 88	+0 99	8	9	38 43	4	38 90	—0 47
Ap l 1	11	2 87	4	1 41	+1 46	9	10	38 82	4	38 94	—0 12
2	7	2 18	4	1 09	+1 09	10	7	38 56	3	37 88	+0 68
3	11	2 21	4	2 09	+0 12	11	4	38 55	3	37 65	+0 90
4	13	2 11	4	2 51	—0 40	12	8	39 28	3	37 0	+1 78
5	13	2 16	4	2 46	—0 30	13	7	38 33	3	38 28	+0 07
6	9	2 66	4	2 34	+0 32	14	15	39 96	5	37 96	+2 00
7	14	3 62	4	2 78	+0 84	16	11	39 25	3	38 19	+1 06
8	11	3 07	4	2 46	+0 61	17	5	38 67	4	38 32	+0 35

INDEX ERROR OF THE MURAL CIRCLE (Continued)

1845	N f b	I d Err by Sta	N f b	I d E by Ref t g C l l m t	D ff	1845	N f b	I d E by St	N f b	I d E by R f t g C l l m t	D ff	
Jun 23 27	8	+0 39 00	17	+0 37 65	+1 44	O t b	5	10	+0 43 26	3	+0 45 27	—2 01
28 30	8	38 97	11	37 66	+1 31		6	9	43 32	3	44 52	—1 20
July 1 3	12	38 22	10	38 04	+0 18		7	11	42 52	4	44 33	—1 81
4	8	38 80	5	37 85	+0 95		8	9	43 13			
5 6	10	37 66	7	37 73	—0 07		9	7	1 11 69	4	1 10 64	+1 05
7	9	37 19	4	38 22	—1 03		10	7	11 14	3	9 89	+1 5
8 11	10	38 14	14	38 64	—0 50		11	3	11 77	3	9 38	+2 39
12 14	8	38 25	10	38 05	0 00		15	10	15 86	3	13 85	+2 01
15 17	9	39 20	10	37 91	+1 09	17	19	5	15 85	12	14 00	+1 8
18 23	9	37 94	13	38 17	—0 23		20	10	14 87	4	13 37	+1 0
24	10	37 2	3	37 51	+0 01		21	5	15 53	3	13 12	+ 41
26 27	10	39 75	2	37 57	+2 18		22	7	15 62	3	12 95	+2 67
28 29	6	39 25	4	37 73	+1 52		23	8	15 44	4	14 41	+1 03
30 31	8	37 85	4	37 93	—0 08		24	9	15 03	5	13 60	+1 43
Augu t 1	7	38 68	3	38 01	+0 67		25	11	13 30	4	12 78	+0 5
2 6	6	38 83	13	37 91	+0 92		26	12	13 63	4	12 56	+1 07
8 11	8	38 80	14	37 48	+1 32		27	7	13 83	4	12 61	+1 22
12	9	39 93	4	37 66	+2 27		28	9	12 86	3	11 81	+1 05
13	5	39 13	3	37 51	+1 62		30	8	13 97	4	12 57	+1 40
15	4	38 44	4	36 92	+1 52		31	7	14 04	3	11 70	+2 34
16	4	39 22	3	37 38	+1 84	N vemb r 1	10	13 79	4	12 26	+1 53	
17 18	5	38 67	6	37 27	+1 40		2	8	14 17	5	12 2	+1 90
19 20	3	38 65	6	37 43	+1 22		3	7	13 12	4	12 00	+1 12
21	10	38 59	4	37 61	+0 98		4	8	12 75	4	10 98	+1 77
22	9	38 67	3	37 00	+1 67		5	14	13 03	4	11 31	+1 72
23	5	40 08	4	37 23	+ 85		6	9	11 10	5	11 64	—0 54
24	3	38 24	3	37 07	+1 17		7	11	11 64	4	11 36	+0 28
26	11	37 78	4	35 89	+1 80		8	8	11 77	4	11 39	+0 18
27	11	37 54	4	36 57	+0 97		9	7	11 88	5	11 59	+0 9
28	10	37 50	4	36 27	+1 29		10	10	12 27	5	11 89	+0 38
29	8	38 05	4	35 97	+2 03		15	8	12 73	3	11 80	+0 93
30	11	37 81	4	35 95	+1 86		16	7	12 40	5	11 60	+0 80
31	11	37 81	4	36 88	+0 93		17	7	11 63	5	10 59	+1 04
S ptember 1	6	37 01	3	36 48	+0 53		18	5	9 91	5	11 00	—1 09
2	15	45 53	4	43 30	+2 23		19	9	10 54	3	10 80	—0 26
7 8	6	4 50	9	44 68	+0 82	21	24	7	11 87	11	11 61	+0 23
9	6	46 52	4	46 10	+0 42		25	9	11 59	5	12 1	—0 56
10	10	4 78	5	45 54	+0 24		26	9	11 24	4	12 45	—1 21
11	9	45 71	4	4 44	+0 27		27	8	10 20	4	11 88	—1 68
12	10	47 03	3	45 72	+1 51		28	4	10 53	4	12 42	—1 89
13	10	46 85	4	4 69	+0 66		29	9	10 79	3	12 44	—1 65
14	12	46 61	5	46 05	+0 56		30	6	10 74	3	11 38	—64
17	5	44 35	5	44 58	—0 23	D mb r 1	8	11 81	4	11 42	—0 11	
18 19	9	44 23	8	45 01	—0 78		4	7	13 15	5	12 26	+0 89
20	10	45 63	3	44 35	+1 28		5	7	12 45	5	12 32	+0 13
21 22	7	45 89	8	45 36	+0 03		6	5	12 34	2	11 87	+0 47
23 24	15	46 49	7	45 50	+0 99		9	7	0 46 81	3	0 46 30	+0 51
25	12	46 85	5	45 24	+1 11		10	6	46 92	3	46 43	+0 49
26	9	45 67	4	45 80	—0 13		11	9	45 64	5	46 64	—1 00
27	12	46 39	2	46 78	—0 39		12 13	5	46 16	9	45 65	+0 51
28	6	46 09	5	46 66	—0 57		14 15	3	47 03	7	46 16	+0 87
29	16	45 88	4	45 65	+0 23		17	7	46 32	4	46 30	+0 02
30	12	46 09	4	46 18	—0 09		18	9	45 54	5	45 56	—0 02
October 1	9	46 46	4	45 35	+1 11		19	10	45 00	4	44 92	+0 08
2	8	45 47	4	45 39	+0 08		21	10	46 45	3	44 97	+1 48
3	12	45 61	4	45 31	+0 30		22 23	10	45 81	7	45 58	+0 23

INDEX ERROR OF THE MURAL CIRCLE (*Continued*)

1845	N b	I d Err by Sta	N b	I d Err by Refl t g C Illum t	Diff	1846	N b	I d Err by Sta	N b	I d Err by Refl t g C Illum t	Diff
D 24 28	10	+0 46 45	11	+0 46 47	—0 0	Fl y 28	12	+0 44 73	4	+0 46 09	—1 36
29	5	46 07	2	46 25	—0 18	M 1	1	46 31	5	46 92	—0 61
30 31	8	4 89	2	46 32	—0 43		2	47 0	5	47 04	—0 02
1846							3	47 80	5	47 75	+0 05
J y 1	2	45 15	7	45 45	—0 30		4	48 95	5	47 93	+1 02
	3	42 76	4	44 90	—2 14		5	48 64	4	49 17	—0 83
	4	43 4	5	43 83	—0 41		6	48 44	5	48 78	—0 34
	5	42 91	4	43 75	—0 84		7	48 24	3	48 77	—0 53
	6	42 84	5	43 88	—1 04		8	48 26	5	49 54	—1 28
	9	44 03	5	44 83	—0 80		9	48 29	4	48 14	+0 15
	10	41 68	4	43 81	—1 3		10	47 99	4	48 73	—0 71
	11	41 50	4	42 80	—1 30		11	46 86	5	48 00	—1 11
	12	41 86	4	42 25	—0 39		12	46 38	5	48 00	—1 62
	13	40 93	5	41 5	—0 62		13	46 48	5	46 47	+0 01
	14	40 59	5	40 74	—0 15		14	47 86	3	48 71	—0 85
	15	39 62	3	39 61	+0 01		15	48 08	4	48 69	—0 61
	16	41 77	5	40 82	+0 95		16	48 27	5	48 43	—0 16
	17	46 77	3	46 82	—0 05		17	47 28	5	49 00	—1 72
	18	45 00	4	45 46	—0 46		18	48 08	5	48 06	+0 02
	19	44 00	4	44 21	—0 21		19	47 41	5	47 06	+0 35
	20	47 29	5	47 31	—0 0		20	46 90	4	47 73	—0 83
	21	47 51	5	46 52	+0 99		21	48 40	4	47 60	+0 80
	22	46 22	5	46 25	—0 03		22	47 72	4	47 73	—0 01
	23	45 06	5	44 11	+0 9		3	47 07	4	47 67	0 00
	24	44 09	2	44 19	—0 10		24	47 31	5	48 02	—0 71
	2	15 11	5	44 68	+0 43		25	47 16	5	47 28	—0 12
	26	41 09	5	44 51	—0 49		26	46 81	5	47 47	—0 66
	27	44 40	5	44 87	—0 47		27	47 91	4	48 32	—0 41
	28	44 69		45 24	—0 55		28	46 44	4	47 98	—1 54
	29	45 17	5	45 07	+0 10		29	47 37	5	48 14	—0 77
30 31	10	4 12	7	44 76	+0 36		30	48 17	5	48 64	—0 47
Fl a y	1	43 84	3	45 10	—1 26	April	31	54 56	5	54 55	+0 01
	2	44 23	5	44 20	+0 03		1	55 04	4	54 59	+0 45
	3	44 44	4	44 25	+0 19		2	53 68	5	53 57	+0 11
	4	44 73	4	44 94	—0 1		3	54 07	4	53 82	+0 25
	5	44 90	3	44 54	+0 36		4	52 67	3	52 49	+0 18
	6	43 9	3	44 24	—0 32		5	52 13	4	53 17	—1 04
	0	45 15	5	45 70	—0 55		6	52 84	5	53 29	—0 45
	10	45 47	5	45 70	—0 23		7	52 35	5	53 99	—1 64
	11	46 24	5	45 74	+0 50		8	52 19	5	53 29	—1 10
	12	46 38	4	45 90	+0 48		9	52 59	4	52 98	—0 39
	13	46 51	3	46 23	+0 28		10	52 64	5	52 80	—0 16
	14	47 80	3	46 40	+1 40		11	53 22	4	53 46	—0 24
	15	45 26	5	45 66	—0 40		12	53 37	3	54 24	—0 87
	16	45 81	4	45 63	+0 18		13	52 36	5	53 31	—0 95
	17	44 90	4	46 36	—1 46		14	52 90	4	53 83	—0 93
	18	45 32	5	46 39	—1 07		15	52 85	4	54 89	—1 54
	19	45 14	5	45 90	—0 76		16	53 09	5	53 22	—0 13
	20	46 57	5	46 92	—0 35		17	53 82	5	54 19	—0 37
	21	43 46	4	44 30	—0 84		18	52 76	3	53 40	—0 64
	22	43 56	5	43 67	—0 11		19	53 89	3	55 41	—1 52
	23	42 98	5	44 84	—1 36		20	54 41	5	53 84	+0 57
	24	45 74	4	44 90	+0 84		21	53 35	4	53 86	—0 51
	25	45 43	5	45 35	+0 08		22	53 06	5	53 54	—0 48
	26	45 68	5	45 57	+0 11		23	52 28	4	53 87	—1 59
	27	45 25	5	46 21	—0 96		24	52 70	5	52 75	—0 05

INDEX ERROR OF THE MURAL CIRCLE (*Continued*)

1846	N _b	I d L by St	N _b	I d L by R f l t g C l l m t	Diff	1846	N _b	I d L by St	N _b	I d L by R f l t g C l l m t	Diff	
Ap l	11	+0 53 34	3	+0 3 5	+0 09	A b 15 16		+0 58 88	4	+0 57 19	-1 69	
6	14	53 21	4	4 44	-1 23	17	1	9 31	4	7 4	+ 07	
27	13	3 80	5	4 48	-0 68	18	9	8 79	3	58 45	+0 34	
28	11	3 36	4	51 38	-1 0	19	4	58 0	3	58 39	+0 3	
29	8	54 16	4	4 66	-0 0	0	7	3	4	57 50	+1 82	
30	9	54 01	4	54 4	-0 23	21 2	8	57 81	6	5 07	+0 74	
May	1	51 52	5	4 31	+0 1	24	16	7 78	4	57 7	+0 06	
2	10	54 7	4	55 24	-0 2	13	13	58 03	4	7 5	+0 51	
3	10	54 34	4	54 73	-0 39	(	9	57 61		51 06	+0 5
4	9	4 68	4	54 0	+0 18	7	8	57 9	3	57 41	+0 38	
5	11	54 72	4	1 10	-0 18	8	8	7 91	3	56 48	+1 43	
6	12	54 78	4	54 72	+0 06	9		58 73	2	57 2	+1 44	
7	11	54 98	5	4 34	+0 64	30 31	6	9 03	6	56 72	+2 31	
8	9	4 86	4	54 83	+0 03	S l t n l	7	9	57 62	11	6 70	+0 92
9	9	54 86	3	54 63	+0 3	9	8	6 83	3	56 48	+0 3	
10	13	54 64	4	51 0	+0 01	10 11	17	57 76	9	57 29	+0 48	
11	11	54 80	4	5	-0 42	1	10	5 1	3	57 53	-0 38	
12	12	5 15	4	54 18	+0 17	14	11	7 69	3	56 83	+0 86	
13	6	54 72		03	-0 31	1	12	6 9	4	57 0	-0 8	
14	9	54 77	5	96	-1 13	17		57 8	3	56 50	+1 08	
15	8	4 80		4 48	+0 32	18	8	57 70	3	54 0	-0 0	
16	9	5 31	4	54 94	+0 37	20	7	56 80	4	56 03	+0 17	
17 19	6	34	12	54 60	+0 74	23	10	57 23	4	57 05	+0 18	
20	11	5 79		4 24	+1 5	24	18	56 96	4	7 16	-0 0	
21 6	8	4 66	17	55 23	-0 7	25	14	56 1	5	7 00	-0 91	
27	4	67		53 78	+1 89	26 27	1	56 10	6	00	-0 10	
29 31	11	44	9	5 27	+0 17	28	14	0 68	5	57 0	-0 37	
J n	1 3	5 30	9	54 91	+0 39	29	17	57 12		50 8	+0 7	
4	4	54 3	4	51 41	-0 18	30	9	56 00	3	7 0	-0 30	
6	4	54 3	3	54 16	+0 07	O t b e	1	50 75	5	0 10	-0 1	
7	9	5 3	3	3 94	+0 7	2	7	50 01	4	6 10	-0 8	
8 9	6	53 8	8	1 1	-0 10	3	11	56 76	2	5 8	+0 91	
10 11	5	5 0	8	54 36	+0 60	7	7	5 74	5	6 38	-0 61	
12	5	54 67	3	54 71	-0 01	6	7	56 8	2	56 7	+0 01	
14	8	5 01		54 85	+0 16	7	13	56 70	4	50 41	+0 20	
15	9	55 79		55 09	+0 70	8	4	1 2 4	2	1 3 30	-0 0	
16 17	4	55 0	6	54 6	+0 19	9	9	2 10	4	2 08	+0 11	
18 19	4	54 95	7	55 30	-0 3	10	10	2 48	3	1 59	+0 8	
21	4	4 99	3	55 09	-0 10	12	7	2 07	4	2 49	-0 42	
23 30	4	4 38	6	54 42	-0 04	13	11	2 07	5	1 80	+0 27	
July	2	5 61	3	54 15	+1 46	14	10	2 55	4	3 15	-0 60	
3	6	5 78	3	54 96	+0 82	1	10	45	5	3 12	-0 67	
4	5	56 6	3	55 81	+0 7	16	8	2 21	3	2 73	-0 12	
5	10	6 09	4	55 64	+0 15	22 3	16	1 42	7	1 78	-0 36	
7	13	56 31	5	54 32	+1 99	24	11	0 59 91	3	59 27	+0 64	
8	9	56 50	4	5 01	+1 49	20	12	59 67	5	59 05	+0 02	
9	5	55 55	4	5 28	+0 27	27 8	10	58 99	8	59 43	-0 44	
10 20	5	7 52	37	56 03	+1 49	29	10	57 86	4	57 46	+0 40	
21 27	11	57 30	21	6 80	+0 50	30	9	57 21	5	57 43	-0 22	
29 30	13	57 30	8	6 91	+0 39	31	8	59 19	3	58 81	+0 38	
August	1	57 54	2	7 66	-0 12	N v e n b e	2	57 60	5	57 30	+0 30	
2 3	4	57 13	7	57 43	-0 30	3	11	5 87	4	57 21	+0 66	
5	3	56 7	3	56 84	-0 27	4	8	56 89	4	56 36	+0 53	
10	10	58 54	5	56 8	+1 72	7	7	57 68	4	57 07	+0 61	
11	8	58 21		7 07	+1 14	6	9	56 85	4	56 99	-0 14	
						7	4	55 53	3	56 34	-0 81	

INDEX ERROR OF THE MURAL CIRCLE (*Continued*)

1846	N b	I d Err by Sta	N b	I d E by Refl t g C ll m t	D ff	1847	N b	I d I by St	N b	I d L by Refl t g C ll m t	D ff
No mb 9	6	+0 54 46	4	+0 55 99	-1 53	F b y 17	12	+0 57 71	4	+0 56 66	+1 08
10	9	55 60	5	56 22	-0 62	18	14	57 57	4	56 77	+0 80
11	6	56 35	4	56 86	-0 51	19	11	7 77	4	58 11	-0 34
12	3	57 33	2	56 62	+0 71	20	10	87	1	58 31	-0 44
14	7	56 47	3	7 03	-0 56	3	14	56 16	4	56 11	+0 0
16	5	54 48	3	56 07	-1 59	21	15	57 9	4	57 77	+0 15
17	11	54 83	3	5 00	-0 17	2	16	6 0	1	5 8	+0 17
18	8	55 54	5	56 38	-0 84	26	13	5 28	4	56 30	-1 02
19	5	56 16	5	56 1	+0 01	27	13	54 87	3	1 83	-0 0
20	5	55 84	3	54 0	+1 31	M rcl 1	17	5 73	1	5 6	+0 17
28 30	11	1 3 22	8	1 4 28	-1 06	2	6	56 69	4	56 8	-0 09
De mb 1	9	1 96	2	2 93	-0 96	3	10	6 86	4	6 16	+0 70
2	4	1 34	4	1 81	-0 50	4	13	79	3	6 21	-0 42
7	9	6 24	4	4 72	+1 5	5	1	57 1	5	55 51	+1 64
8	10	6 75	4	7 39	-0 64	6	1	6 36	3	56 45	-0 09
9	8	6 45	4	6 15	+0 30	7	8	6 93	8	5 54	+0 39
10 11	11	7 31	8	7 87	-0 56	9	16	6 37	8	6 12	+0 2
12	7	6 13	4	5 18	+0 95	10	11	6 39	1	5 91	+0 48
14 18	11	5 05	11	5 38	-0 33	11	13	55 13	5	18	-0 0
19 21	10	7 16	9	7 05	+0 11	1	13	7 26	3	5 8	+1 28
22	10	7 48	2	6 91	+0 7	13	9	1 60	4	3 30	+1 30
1847						1	16	6 28	9	1 82	+1 46
Jan ry 4	8	5 41	5	4 08	+1 33	17	7	56 3		14	+0 88
5	7	3 98	4	4 1	-0 44	18	12	5 73		3 06	+1 77
6	7	4 59	3	4 11	+0 18	19	3	55 8	4	1 38	+1 11
7	8	4 20	3	3 66	+0 4	20 22	10	5 0	11	1 6	+0 40
8	10	3 87	5	3 3	+0 2	23	14	5 183	7	1 36	+0 47
9	7	3 56	3	3 3	+0 24	24	13	5 68	5	54 32	+1 36
10 11	9	2 27	7	2 11	+0 16	25	10	6 02		4 1	+1 90
12	12	2 11	5	0 88	+1 23	26	12	56 23		30	+0 93
13	12	1 28	4	0 2	+0 76	27	11	57 02	4	5 48	+1 4
14	12	1 40	4	0 29	+1 11	28 29	15	56 73	8	55 8	+0 88
15	12	0 57	4	0 36	+0 1	30	7	56 6	1	55 83	-0 18
16	11	1 26	3	0 08	+1 18	31	11	5 88	7	55 60	+0 28
17 18	13	1 51	5	0 90	+0 61	Apr l 1	10	55 91	4	55 33	+0 58
19	12	1 80	5	0 29	+1 1	2	12	5 34	4	5 00	+0 88
20	15	0 80	5	0 982	+0 98	3	8	55 86	3	56 14	-0 28
21	14	0 08	5	53 48	+0 60	5	1	5 8	4	5 91	-0 13
22	7	0 9 62	4	58 42	+1 20	6	11	56 00	4	55 29	+0 71
23 24	11	1 0 17	0	59 24	+0 93	7	11	5 81	4	55 79	+0 02
2	10	0 59 59	5	59 28	+0 31	8	8	57 43	4	29	+0 14
26	13	0 58 99	4	58 96	+0 03	9	6	56 22	5	55 18	+0 74
27	13	0 59 66	5	58 03	+1 63	10	8	5 51	3	5 45	+0 06
28	9	1 0 17	5	59 16	+1 01	11 12	6	5 98	5	55 70	+0 28
29	7	1 1 02	5	59 51	+1 51	13	8	5 77	4	56 03	-0 26
30 31	12	0 58 98	6	59 40	-0 40	14	7	5 65	4	56 00	-0 35
F bruary 1	12	0 58 64	5	57 91	+0 73	15 18	6	5 56	11	55 26	+0 30
2	8	1 0 05	7	58 83	+1 22	19	5	56 83	3	54 86	+1 97
4	13	0 59 28	5	59 10	+0 18	20 21	10	55 75	7	5 53	+0 22
5	6	1 0 12	3	59 78	+0 34	22	7	5 4	4	6 5	-1 10
6	5	0 59 41	2	57 93	+1 48	23	9	56 45	4	55 63	+0 82
9 11	7	59 82	9	59 35	-0 03	24 26	12	55 67	8	55 27	+0 40
12	10	58 83	4	58 83	0 00	27	9	54 9	4	5 7	-0 98
13	12	58 66	3	58 25	+0 41	28	6	54 22	4	54 4	-0 20
15	11	57 64	4	57 18	+0 46	29 30	9	55 78	7	55 64	+0 14
16	14	57 02	4	56 01	+1 01	M y 1	10	56 80	4	54 96	+1 86

INDEX ERROR OF THE MURAL CIRCLE (Continued)

1847	N b	I l I by St	N b	I d I by R f t g C l l m t	Diff	1847	N b	I d I by St	N b	I l I by R f t g C l l m t	Diff
May	3	10	+0	6 04	+1 72	Oct	11	9	+0	54 42	—0 03
	4	9		6 53	+1 34		15	8		55 84	+1 26
	5	7		57 86	+3 43		18	9		56 00	+1 13
	7	9		56 86	+2 01		18	4		57 13	+2 11
	8	8		56 43	+2 32		19	4		56 33	+1 31
	10	7		55 98	+0 20		20	6		5 73	+0 88
	11	10		56 6	+0 81		21	3		57 10	+2 36
	12	7		56 54	+0 62		22	5		58 38	+2 25
	14	9		6 73	+0 91		25	3		58 54	+3 15
	15	8		55 75	—0 10		26	7		57 06	+1 82
	17	8		57 43	+2 8		28	2		56 51	—0 03
	18	7		55 7	—0 01		29	4		58 16	+0 57
	19	7		57 10	+1 38	Nov	4	8	1	3 78	+0 96
	20	11		56 63	—0 04		5	7		4 52	+0 00
	21	10		56 23	+0 45		6	11		5 31	—0 10
	22	10		5 28	—0 31		7	8		5 12	+0 31
	25	9		55 27	—0 13		9	11		4 83	+0 37
	26	11		4 J	—0 51		10	8		4 65	—0 04
June	1	2		54 57	+1 1		11	8		5 33	+0 78
	3	9		4 92	+0 52		13	4		4 88	—0 74
	11	6		5 11	+2 31		14	2		5 36	—0 86
	12	15		5 62	+2 32		15	11		8 95	—0 63
	18	4		55 31	+1 45		16	8		4 13	—0 01
	19	29		54 65	+1 67		18	2		4 89	—0 34
July	5	6		54 59	+1 37		19	2		2 82	—1 43
	7	10		5 8	+2 61		20	8		3 49	—0 17
	8	5		6 76	+3 11		23	8		4 69	—0 48
	9	13		56 4	+2 46		24	4		4 60	0 00
	15	2		53 70	—0 33		27	10		5 40	+1 21
	19	12		55 09	+1 37						
	20	1		6 5	+2 24						
	21	22		5 24	+1 11						
30 Aug	5	3		6 J1	+3 03						
	9	10		4 99	+0 24						
	10	5		5 35	+1 04						
	13	16		5 18	+1 44						
	17	12		51 79	+1 66						
	19	13		54 97	+1 14						
	20	5		5 15	+1 08						
	21	13		5 08	+0 11						
	23	25		54 75	+0 53						
	26	11		54 97	+1 19						
Sept	7	8		54 92	+0 83						
	9	11		55 10	+1 07						
	17	5		54 30	+0 71						
	18	9		55 17	+1 77						
	20	9		54 81	+0 71						
	21	22		56 04	+2 24						
	24	9		55 27	+1 3						
	25	4		54 45	+1 24						
	27	30		55 02	+0 87						
Octob r	4	12		55 41	+1 60						
	5	6		55 56	+1 95						
	6	7		55 08	+1 77						
	7	12		54 88	+1 09						
	8	9		53 52	—1 00						

NOTES FROM THE MURAL CIRCLE OBSERVATION BOOKS

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The following Memoiranda copied from the Mural Circle Observation Books will in several instances explain the causes of sudden alteration which have taken place in the Index Errors thus—

1838 J n u y 23 d	Cleaned and adjusted the Microscopes
1838 April 24th	Found all the wires broken without any cause to explain how they came so prompt new set
1838 S e p t e m b e r 10th	I took the Circle out cleaned the axes and readjusted the Microscopes
1838 S e p t e m b e r 16th and 23 d	With the assistance of J Caldwell Esq the Superintendent of the Transit Observatory I unclamped the Telescope from the Circle and re-examined the errors of division on the Collimation principle down to very 5 degrees
1839 S e p t e m b e r 3 d—15th	I unlamped the Telescope from the Circle with a view to the still further examination of the errors of division
1839 N o v e m b e r 30th } 1840 J a n u a r y 14th }	The Telescope was again released from the Circle and the observations suspended in order to continue the examination of the division down to very small divisions—every 5 minutes
1840 F e b r u a r y 4th	Took the Circle out to apply oil to the axes as I was about to proceed to Europe and I returned
1842 M a y 4th	On my return from Europe I found the axes stiff in its movements and the Microscopes very dirty—took out axes and applied fresh oil &c
1843 M a r c h 22d	Found all the wires broken—put in a new set
1843 O c t o b e r 19th	During the last two days I have had a suspicion that the fixed horizontal wire was not straight removed it and put in another (a cobweb)

NOTES FROM THE MURAL CIRCLE OBSERVATION BOOKS (*Continued*)

1844 January 30th	Adj t d nd l ed th M p
1844 Oct b 3 d—4th	It k th Crcl x ut t l t d apply f h l &
1845 J u ry 3 d	I l ut n a n w v t al w i e d dju ted tl M p &
1845 April 25th	Th Ind x E o h lt ed l s c d v th ut y pp e t
1845 May 8th—9th	Th I l x Err l ag alt d al e ds th ut y b g ble t xpl th p b bl s
1845 S ptember 1 t	T k ut tl Obj t Gl st no e n bl k du t wl l l d s ttled o tle d f t—p b bly f ll n f m th s d s f the tub
1846 Mar h 31 t	To k ut tle Olj t Gl to ove om bl k d st wl h had ttl d n the n s d
1845 November 25th	A severe Hurri ane oc ur ed

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES

OF

THE SUN, MOON, AND PLANETS,

AS DEDUCED FROM

THE MADRAS OBSERVATIONS

COMPARED WITH THE TABLES

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER

M an S l T u n f O b e r t n.				A R f r m O b t i n.	A R f r m N A	E r r o r f N A	N P D f m O b r v d	N P D f r m N A	E f N A	M H S e m l d
1831				m			/			/
Jan	8	0	13 11				108 21 59 07	2 00	+ 2 93	
	29	0	13 22				108 6 16 07	15 00	- 1 07	
	30	0	13 32				107 50 8 08	10 00	+ 1 92	
Feb	1	0	13 51				107 16 54 67	1 00	+ 6 33	
	2	0	13 59				106 59 59 75	58 00	+ 5 25	
	3	0	14 6				106 42 34 83	38 00	+ 3 17	
	4	0	14 12				106 24 59 42	0 00	+ 0 58	
	5	0	14 18				106 7 0 82	5 00	+ 4 18	
	6	0	14 22				105 48 50 61	53 00	+ 2 39	
	7	0	14 26				105 30 23 00	25 00	+ 2 00	
	8	0	14 30				105 11 36 63	41 00	+ 4 37	
	11	0	14 34				104 13 56 24	59 00	+ 2 76	
	12	0	14 34				103 54 10 89	16 00	+ 5 11	
	13	0	14 33				103 31 16 60	19 00	+ 2 40	
	14	0	14 32				103 14 8 29	9 00	+ 0 71	
	15	0	14 29				102 53 42 83	47 00	+ 4 17	
	16	0	14 27				102 33 9 40	12 00	+ 2 60	
	17	0	14 23				102 12 20 59	25 00	+ 4 41	
	18	0	14 19				101 1 22 11	26 00	+ 3 89	
	19	0	14 13				101 30 11 97	16 00	+ 4 03	16 11
	20	0	14 8 0	22 11 58 48	58 10	- 0 38	101 8 53 69	55 00	+ 1 31	
	21	0	14 1 6	22 15 48 37	47 90	- 0 47	100 47 29 15	25 00	- 4 15	16 46
	22	0	13 53 8	22 19 37 10	37 10	0 00				
	23	0	13 45 9	22 23 25 62	25 70	+ 0 08	100 3 47 52	55 00	+ 7 48	16 42
	24	0	13 37 5	22 27 13 78	13 70	- 0 08	99 41 53 60	55 00	+ 1 40	16 21
	25	0	13 28 4	22 31 1 30	1 10	- 0 20	99 19 42 06	47 00	+ 4 94	15 59 0
	26	0	13 18				98 57 29 45	31 00	+ 1 55	
	27	0	13 8 9	22 38 34 89	34 00	- 0 89	98 35 3 27	7 00	+ 3 73	16 01
	28	0	12 57				98 12 35 04	35 00	- 0 04	
Mar	2	0	12 34 2	22 49 49 81	49 40	- 0 41	97 27 1 66	10 00	+ 8 34	
	3	0	12 21 0	22 53 33 04	33 40	+ 0 36	97 4 13 11	18 00	+ 4 89	16 36
	4	0	12 8 3	22 57 16 86	17 00	+ 0 14	96 41 15 27	21 00	+ 5 73	16 51
	5	0	11 55 9	23 1 1 01	0 10	- 0 91	96 18 7 16	17 00	+ 9 84	16 44
	6	0	11 41				95 55 1 04	8 00	+ 6 96	
	7	0	11 27				95 31 46 65	54 00	+ 7 35	
	8	0	11 12 8	23 12 7 40	7 10	- 0 30	95 8 30 54	35 00	+ 4 46	16 1
	9	0	10 57 9	23 15 49 23	48 70	- 0 53	94 45 9 17	13 00	+ 3 83	
	10	0	10 42 9	23 19 30 46	29 80	- 0 66	94 21 40 70	46 00	+ 5 30	16 21
	11	0	10 27 3	23 23 11 53	10 70	- 0 83	93 58 14 22	16 00	+ 1 78	16 15
	12	0	10 11 3	23 26 51 98	51 30	- 0 68	93 34 37 72	44 00	+ 6 28	16 13
	13	0	9 55 0	23 30 32 11	31 50	- 0 61	93 11 4 19	8 00	+ 3 81	15 59 1
	14	0	9 38 5	23 34 12 31	11 50	- 0 81	92 47 25 90	31 00	+ 5 10	16 26
	15	0	9 21 9	23 37 52 15	51 20	- 0 95	92 23 47 53	51 00	+ 3 47	15 59 4
	16	0	9 4				92 0 8 32	10 00	+ 1 68	
	17	0	8 46 8	23 45 10 01	9 80	- 0 21	91 36 27 61	29 00	+ 1 39	16 14
	18	0	8 29							
	19	0	8 12 1	23 52 28 23	27 50	- 0 73	90 48 56 85	4 00	+ 7 15	16 09
	20	0	7 53 9	23 56 6 47	6 10	- 0 37	90 25 18 81	22 00	+ 3 19	16 16
	21	0	7 35 6	23 59 44 70	44 50	- 0 20				
	22	0	7 18 0	0 3 23 67	22 70	- 0 97	89 37 53 85	0 00	+ 6 15	16 19
	23	0	6 59 9	0 7 2 15	0 90	- 1 25	89 14 19 24	21 00	+ 1 76	
	24	0	6 41 2	0 10 39 89	38 90	- 0 99				16 67
	25	0	6 22 1	0 14 17 28	16 90	- 0 38	88 27 6 92	8 00	+ 1 08	16 32
	26	0	6 3 9	0 17 55 70	54 80	- 0 90				16 39
	27	0	5 45 2	0 21 33 42	32 60	- 0 82	87 40 0 98	3 00	+ 2 02	16 07
	28	0	5 26 4	0 25 11 25	10 50	- 0 75	87 16 27 71	35 00	+ 7 29	16 34
	29	0	5 7				86 53 6 04	11 00	+ 4 96	

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (*Continued*)

M an S ar Tim f				A. R fr m		A R fr m		Err f N A	N P D fr m		N P D from		E f N A	M		
Ob ti				Ob rv ti		N A			Ob ti n.		N A.			H S mid		
1831					m				/				/			
M y	29	23	57	39	4	25	10 17	9 30	— 0 87	68	19	45 05	49 00	+ 3 95	16	27
	30	23	57	11 8	4	29	14 68	13 80	— 0 88						15	59 6
	31	23	57	19 9	4	33	19 27	18 60	— 0 67	68	2	14 66	10 00	— 4 66	15	59 0
June	1	23	57	28 6	4	37	24 71	24 10	— 0 61	67	53	53 18	55 00	+ 1 82	16	0 4
	2	23	57	37						67	46	0 62	2 00	+ 1 38	15	58 5
	3	23	57	47 4	4	45	36 71	36 00	— 0 71	67	38	30 65	33 00	+ 2 35	15	58 5
	4	23	57	57 3	4	49	43 01	42 50	— 0 51	67	31	32 32	28 00	— 4 32	16	1 7
	5	23	58	7 6	4	53	49 82	49 30	— 0 52	67	24	45 04	45 00	— 0 04	16	6 9
	6	23	58	18 1	4	57	57 41	56 60	— 0 81	67	19	28 73	26 00	— 2 73	16	1 2
	7	23	58	29 5	5	2	5 04	4 20	— 0 84	67	12	31 11	32 00	+ 0 89	15	59 5
	8	23	58	41 0	5	6	13 05	12 10	— 0 95	67	7	4 33	1 00	— 3 33	15	58 5
	9	23	58	52 4	5	10	21 24	20 40	— 0 84	67	1	57 06	5 00	— 2 06	16	0 1
	10	23	59	4 0	5	14	29 35	28 90	— 0 45	66	57	16 58	12 00	— 4 58	16	1 9
	11	23	59	16 0	5	18	37 90	37 50	— 0 40	66	52	58 35	53 00	— 5 35	16	1 2
	12	23	59	28 5	5	22	47 02	46 30	— 0 72	66	49	5 64	0 00	— 5 64	1	59 3
	13	23	59	41 0	5	26	56 03	55 30	— 0 73						16	1 0
	16	0	0	6 0	5	35	14 32	13 80	— 0 52	66	39	50 85	46 00	— 4 85	16	2 1
	19	0	0	44 1	5	47	42 23	42 10	— 0 13	66	34	10 98	15 00	+ 4 02	15	58 8
	21	0	1	10 6	5	56	1 77	1 10	— 0 67	66	32	40 27	38 00	— 2 27	15	56 0
	22	0	1	23 2	6	0	11 02	10 60	— 0 42	66	32	32 61	26 00	— 6 61	16	3 5
	23	0	1	36 1	6	4	20 67	20 10	— 0 57	66	32	39 46	40 00	+ 0 54	16	2 9
	24	0	1	48						66	33	22 60	18 00	— 4 60	16	0 6
	25	0	2	1 6	6	12	39 22	38 80	— 0 42	66	34	26 35	21 00	— 5 35	16	1 9
	26	0	2	14 5	6	16	48 66	48 00	— 0 66	66	35	52 97	49 00	— 3 97	16	2 9
	27	0	2	27 1	6	20	57 79	57 00	— 0 79	66	37	49 45	42 00	— 7 45	16	0 1
	28	0	2	39 5	6	25	6 83	6 00	— 0 83	66	39	58 79	59 00	+ 0 21	16	4 0
	29	0	2	51 6	6	29	15 57	14 90	— 0 67	66	42	42 25	40 00	— 2 25	16	3 4
	30	0	3	3 9	6	33	24 45	23 50	— 0 95	66	45	45 06	47 00	+ 1 94	16	1 0
July	1	0	3	15 9	6	37	32 97	32 00	— 0 97	66	49	22 17	16 00	— 6 17	16	3 1
	2	0	3	27 4	6	41	40 99	40 20	— 0 79	66	53	16 81	11 00	— 5 81	16	4 6
	3	0	3	38 2	6	45	48 40	48 20	— 0 20	66	57	36 29	30 00	— 6 29	1	59 7
	4	0	3	50 2	6	49	56 93	55 90	— 1 03						16	3 4
	5	0	4	1 0	6	54	4 45	3 40	— 1 05						16	0 8
	6	0	4	11 6	6	58	11 47	10 60	— 0 87	67	12	56 85	52 00	— 4 85	16	0 8
	7	0	4	21 8	7	2	18 45	17 60	— 0 85	67	18	52 04	48 00	— 4 04	16	0 5
	8	0	4	31 5	7	6	24 67	24 20	— 0 47	67	25	8 69	7 00	— 1 69	16	1 1
	11	0	4	58 6	7	18	41 63	41 40	— 0 23	67	46	25 60	23 00	— 2 60	16	1 0
	14	0	5	22 8	7	30	55 52	54 70	— 0 82	68	11	9 29	7 00	— 2 29	16	3 3
	17	0	5	42 2	7	43	4 45	3 60	— 0 85	68	39	13 11	11 00	— 2 11	15	59 8
	21	0	6	0 4	7	59	8 92	7 90	— 1 02	69	21	47 94	41 00	— 6 94	15	56 5
	25	0	6	9 1	8	15	3 90	3 20	— 0 70	70	4	45 75	42 00	— 3 75	15	58 9
	27	0	6	10 2	8	22	58 16	57 30	— 0 86	70	35	49 82	43 00	— 6 82	15	59 5
	29	0	6	9 1	8	31	50 44	49 20	— 1 24	71	3	7 06	1 00	— 6 06	16	0 9
	30	0	6	7 3	8	35	45 24	44 30	— 0 94	71	17	13 27	8 00	— 5 27	16	1 1
	31	0	6	5 3	8	39	39 65	38 70	— 0 95	71	31	35 87	34 00	— 1 87		
A g	3	0	5	55 5	8	50	19 49	18 50	— 0 99	72	16	44 66	40 00	— 4 66		
	4	0	5	50 9	8	54	11 51	10 60	— 0 91	72	32	22 92	17 00	— 5 92	15	55 0
	5	0	5	46 0	8	58	3 07	2 10	— 0 97	72	48	19 18	12 00	— 7 18		
	6	0	5	40 7	9	1	54 25	53 10	— 1 15	73	4	28 79	24 00	— 4 79	15	9 9
	7	0	5	34 3	9	5	44 19	43 40	— 0 79	73	20	52 40	52 00	— 0 40	16	1 0
	8	0	5	27 8	9	9	34 29	33 20	— 1 09	73	37	43 53	36 00	— 7 53	16	1 3
	11	0	5	3 6	9	20	59 70	59 00	— 0 70	74	29	24 69	21 00	— 3 69	15	57 2
	12	0	4	54 3	9	24	46 96	46 40	— 0 56	74	47	8 21	7 00	— 1 21		
	13	0	4	44 9	9	28	34 14	33 20	— 0 94	75	5	8 65	7 00	— 1 65	15	59 0
	14	0	4	34 2	9	32	19 98	19 50	— 0 48	75	23	—	21 00		16	1 4
18	0	3	48 0	9	47	20 03	19 00	— 1 03	76	38	32 52	34 00	+ 1 48	16	1 4	

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (C & d)

Man S i Tim f	A. R f m	A. R f m	Err f N A	N l D f m	N P D f m	Err f N A	M
Ob	Ob rv	N A		Ob rv ti	N A		H Semid.
1831							
A g 20 0 3 21 6	9 54 46 38	45 60	— 0 78	77 17 29 24	27 00	— 2 24	16 15
22 0 2 52 8	10 2 10 65	10 10	— 0 55	77 57 9 68	10 00	+ 0 32	16 18
23 0 2 37 6	10 5 52 00	51 70	— 0 30	78 17 18 83	18 00	— 0 83	16 06
24 0 22 4	10 9 33 32	32 80	— 0 52	78 37 41 98	37 00	— 4 98	16 08
25 0 2 6 4	10 13 13 87	13 60	— 0 27	78 58 5 48	7 00	+ 1 52	16 12
27 0 1 33 7	10 20 34 08	33 80	— 0 28	79 39 43 86	39 00	— 4 86	16 27
31 0 0 24 3	10 35 10 85	9 90	— 0 95	81 4 44 51	38 00	— 6 51	16 03
S pt 1 0 0 5 6	10 38 48 72	48 00	— 0 72	81 26 19 95	15 00	— 4 95	16 11
4 23 58 49 9	10 53 18 77	18 10	— 0 67	82 54 6 16	7 00	+ 0 84	15 59 3
6 23 58 10 2	11 0 32 21	31 80	— 0 41	83 38 48 77	45 00	— 3 77	15 59 6
7 23 57 50 6	11 4 9 12	8 30	— 0 82	84 1 15 35	14 00	— 1 35	16 00
9 23 57 9 6	11 11 21 02	20 60	— 0 42	84 46 32 74	31 00	— 1 74	
10 23 56 49 2	11 14 56 98	56 40	— 0 58	85 9 20 44	17 00	— 3 44	16 14
11 23 56 28 7	11 18 33 17	32 40	— 0 77	85 32 9 63	8 00	— 1 63	
12 23 56 7 5	11 22 8 57	8 20	— 0 37	85 55 4 29	3 00	— 1 29	16 16
13 23 55 46 8	11 25 44 29	43 70	— 0 59	86 18 8 03	2 00	— 6 03	16 03
14 23 55 25 8	11 29 19 82	19 20	— 0 62	86 41 5 43	5 00	— 0 43	15 57 4
15 23 55 5 2	11 32 55 70	54 60	— 1 10	87 4 13 89	12 00	— 1 89	16 13
16 23 54 43 8	11 36 30 82	29 90	— 0 92	87 27 25 97	23 00	— 2 97	15 58 6
18 23 54 1 6				88 13 55 62	51 00	— 4 62	16 08
20 23 53 19 2	11 50 52 24	41 30	— 0 94	89 0 34 72	29 00	— 5 72	16 01
21 23 52 58 4	11 54 27 86	26 80	— 1 06	89 23 55 00	51 00	— 4 00	16 14
23 3 52 16 7	12 1 39 09	38 00	— 1 09	90 10 39 99	38 00	— 1 99	15 58 1
24 23 51 55 5	12 5 14 41	13 80	— 0 61	90 34 3 28	2 00	— 1 28	16 04
25 23 51 35 3	12 8 50 68	49 70	— 0 98	90 57 28 15	27 00	— 1 15	15 59 1
26 23 51 15 0	12 12 26 9	25 80	— 1 15	91 20 57 57	52 00	— 5 57	16 23
27 23 50 54 9	12 16 3 20	2 30	— 0 90	91 44 17 49	16 00	— 1 49	15 58 4
28 23 50 34 8	12 18 39 83	39 00	— 0 83	92 7 43 30	40 00	— 3 30	16 26
O t 3 23 48 59 9	12 37 47 36	46 20	— 1 16	94 4 21 26	20 00	— 1 26	16 19
4 23 48 41 9	12 41 25 86	24 70	— 1 16	94 27 33 50	33 00	— 0 50	16 07
5 23 48 24 2	12 45 4 57	3 40	— 1 17	94 50 43 42	42 00	— 1 42	16 31
6 23 48 6 5	12 48 43 48	42 60	— 0 88	95 13 54 66	48 00	— 6 66	16 20
7 23 47 49 2	12 52 22 75	22 20	— 0 55	95 36 50 29	50 00	— 0 29	16 32
11 23 46 46 2	13 7 5 70	4 60	— 1 10	97 8 10 67	12 00	+ 1 33	
12 23 46 31 6	13 10 47 47	46 30	— 1 17	97 30 50 17	48 00	— 2 17	16 12
13 23 46 17 3	13 14 29 80	28 60	— 1 20	97 53 17 82	17 00	— 0 82	16 05
14 23 46 3 2	13 18 12 33	11 40	— 0 93	98 15 42 76	40 00	— 2 76	16 40
16 23 46 37 5	13 25 39 52	38 50	— 1 02	99 0 6 78	7 00	+ 0 22	16 14
20 23 44 52 5	13 40 40 70	39 70	— 1 00	100 27 21 02	19 00	— 2 02	
21 23 44 42 8	13 44 27 55	26 50	— 1 05	100 48 48 87	46 00	— 2 87	16 16
22 23 44 33 9	13 48 15 10	14 10	— 1 00	101 10 1 84	2 00	+ 0 16	15 58 6
24 23 44 18 2	13 55 52 39	51 30	— 1 09	101 52 7 12	4 00	— 3 12	
29 23 43 51 0	14 15 7 99	7 50	— 0 49	103 33 59 94	56 00	— 3 94	
30 23 43 47 8	14 19 1 42	1 00	— 0 42	103 53 42 42	43 00	+ 0 58	16 20
31 23 43 46 2	14 22 56 61	55 40	— 1 21	104 13 15 29	15 00	— 0 29	15 59 0
Nov 1 23 43 44 8	14 26 51 44	50 50	— 0 94	104 32 33 84	34 00	+ 0 16	16 38
2 23 43 44 3	14 30 47 49	46 40	— 1 09	104 51 38 50	38 00	— 0 50	16 03
7 23 43 54 0	14 50 39 43	38 70	— 0 73	106 23 10 47	16 00	+ 5 53	15 54 6
8 23 43 57 5	14 54 40 09	39 60	— 0 49	106 40 49 73	47 00	— 2 73	16 00
9 23 44 2 9	14 58 42 11	41 40	— 0 71	106 58 3 46	1 00	— 2 46	16 17
11 23 44 15 8	15 6 48 06	47 30	— 0 76	107 31 40 45	38 00	— 2 45	16 11
12 23 44 23 1	15 10 51 95	51 60	— 0 35	107 48 3 81	59 00	— 4 81	15 59 2
17 23 45 14 2	15 31 26 05	25 40	— 0 65	109 4 55 46	55 00	— 0 46	16 04
18 23 45 26 2	15 35 34 74	34 60	— 0 14	109 19 19 47	19 00	— 0 47	
19 23 45 40 5	15 39 45 55	44 60	— 0 95	109 33 19 82	21 00	+ 1 18	
20 23 45 54 7	15 43 56 45	55 40	— 1 05	109 47 0 65	1 00	+ 0 35	

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN CENTER (Contd)

M	Solar Time	A R from	A R from	Err	N P D from	N P D from	Err	Mean
Observed	Observed	Observed	N A	f N A	Observed	N A	f N A	H S mid
1831								
N v	21 23 46 98	15 48 8 07	7 20	- 0 87	110 0 19 63	21 00	+ 1 37	
	26 23 47 36 9	16 9 18 20	17 60	- 0 60	111 1 18 65	22 00	+ 3 35	16 08
	28 23 48 17 8	16 17 52 19	51 20	- 0 99	111 23 36 4	2 00	- 1 64	
	30 23 49 0 5	16 26 28 15	27 70	- 0 45	111 43 6 91	7 00	+ 0 09	16 17
De	1 23 49 23 4	16 30 47 72	47 00	- 0 72	111 52 30 54	32 00	+ 1 46	16 29
	2 23 49 46 4	16 35 7 18	6 80	- 0 38	112 1 31 84	32 00	+ 0 16	
	3 23 50 10 3	16 39 27 74	27 30	- 0 44	112 10 4 91	6 00	+ 1 09	
	4 23 50 35 2	16 43 49 14	48 40	- 0 74	112 18 12 08	15 00	+ 2 92	
	5 23 51 0 0	16 48 10 47	10 10	- 0 37				
	6 23 51 25 7	16 52 33 00	32 30	- 0 70	112 33 12 29	12 00	- 0 29	15 59 7
	7 23 51 51 5	16 56 55 51	55 10	- 0 41	112 40 3 71	2 00	- 1 71	
	9 23 52 45 0	17 5 42 17	41 90	- 0 27	112 52 22 62	21 00	- 1 62	16 27
	11 23 53 40 8	17 14 31 14	30 20	- 0 94	113 2 48 84	50 00	+ 1 16	16 14
	12 23 54 9 1	17 18 56 06	55 00	- 1 06	113 7 24 84	23 00	- 1 84	16 15
	13 23 54 37 5	17 23 21 06	20 10	- 0 96	113 11 28 25	30 00	+ 1 75	16 19
	14 23 55 5 7	17 27 46 13	45 50	- 0 63	113 15 9 54	9 00	- 0 54	
	15 23 55 35 2	17 32 12 26	11 10	- 1 16	113 18 21 04	20 00	- 1 04	
	16 23 56 4 4	17 36 37 94	36 80	- 1 14	113 21 1 34	2 00	+ 0 66	16 17
	18 23 57 3 6	17 45 30 27	29 00	- 1 27	113 25 0 83	3 00	+ 2 17	
	19 23 57 32 7	17 49 56 22	55 40	- 0 82	113 26 21 58	21 00	- 0 58	16 01
	20 23 58 3 0	17 54 23 11	21 90	- 1 21	113 27 11 44	11 00	- 0 44	16 00
	21 23 58 32 8	17 58 49 56	48 50	- 1 06	113 27 34 70	33 00	- 1 70	16 30
	22 23 59 2 9	18 3 16 20	14 90	- 1 30	113 27 25 74	27 00	+ 1 26	
	23 23 59 32 6	18 7 42 62	41 50	- 1 12	113 26 44 74	52 00	+ 7 26	
	26 0 0 31				113 24 13 46	17 00	+ 3 54	16 13
	29 0 2 1 6	18 29 54 80	53 80	- 1 00	113 16 50 25	53 00	+ 2 75	15 59 5
	31 0 3 0 3	18 38 46 41	45 30	- 1 11	113 9 34 04	36 00	+ 1 96	
1832								
Jan.	1 0 3 28 0	18 43 11 27	11 40	+ 0 13	113 5 13 50	16 00	+ 2 50	15 58 02
	2 0 3 57				113 0 28 00	30 00	+ 2 00	
	3 0 4 25 5	18 52 1 81	1 50	- 0 31	112 55 13 09	14 00	+ 0 91	16 1 44
	4 0 4 53				112 49 28 29	31 00	+ 2 71	
	6 0 5 48 4	19 5 14 50	13 90	- 0 60	112 36 46 40	44 00	- 2 40	16 1 64
	7 0 6 15 4	19 9 38 17	37 20	- 0 97	112 29 39 73	41 00	+ 1 27	15 58 00
	8 0 6 41 6	19 14 0 85	0 00	- 0 85	112 22 6 73	12 00	+ 5 27	
	9 0 7 6 7	19 18 22 72	22 30	- 0 42	112 14 12 00	17 00	+ 5 00	16 0 80
	10 0 7 32 0	19 22 44 67	41 10	- 0 57	112 5 47 00	54 00	+ 7 00	16 0 18
	11 0 7 56 9	19 27 6 35	5 30	- 1 05	111 56 58 75	3 00	+ 4 25	
	12 0 8 20 8	19 31 26 78	25 80	- 0 98	111 47 48 03	46 00	- 2 03	16 2 34
	13 0 8 43 9	19 35 46 46	45 70	- 0 76	111 38 3 00	4 00	+ 1 00	
	14 0 9 6 3	19 40 5 78	5 10	- 0 68	111 28 2 29	0 00	- 2 29	16 2 33
	15 0 9 28 8	19 44 24 63	23 50	- 1 13	111 17 30 82	32 00	+ 1 18	16 3 18
	18 0 10 30				110 43 36 03	38 00	+ 1 97	
	19 0 10 49				110 31 28 74	32 00	+ 3 26	16 3 28
	21 0 11 25				110 6 7 91	10 00	+ 2 09	
	22 0 11 42				109 52 54 16	55 00	+ 0 84	
	24 0 12 14 7	20 22 39 78	38 80	- 0 98	109 25 13 70	20 00	+ 6 30	16 1 10
	25 0 12 28 9	20 26 50 94	50 30	- 0 64	109 11 1 35	0 00	- 1 35	16 0 67
	26 0 12 42 7	20 31 1 29	0 90	- 0 39	108 56 13 41	18 00	+ 4 59	16 1 24
	27 0 12 56 0	20 35 11 14	10 60	- 0 54	108 41 18 42	16 00	- 2 42	16 0 84
	28 0 13 9 0	20 39 20 59	19 50	- 1 09	108 25 47 84	53 00	+ 5 16	16 1 66
	29 0 13 20 3	20 43 28 47	27 60	- 0 87	108 10 11 75	11 00	- 0 75	15 59 03
	30 0 13 30 6	20 47 35 45	35 20	- 0 25	107 54 2 13	7 00	+ 4 87	16 4 63
	31 0 13 40 8	20 51 42 22	41 70	- 0 52	107 37 51 78	46 00	- 5 78	16 2 74
F b	1 0 13 50 9	20 55 48 07	47 40	- 0 67	107 21 3 62	7 00	+ 3 38	16 3 37
	2 0 13 58 2	20 59 52 78	5 30	- 0 48	107 4 11 87	8 00	- 3 87	16 4 05
	3 0 14 5 8	21 3 56 99	56 30	- 0 69	106 46 49 19	50 00	+ 0 81	16 3 10

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (Continued)

M	S	Time	A R from	A R from	Err	N P D from	N P D from	E	M
Obs	rv	ti	Obs	N A	f N A	Obs	N A	f N A	H S mid
1832			m			/			/
Feb	4	0 14 11.9	21 7 59.76	59.60	— 0.16	106 29 23.02	17.00	— 6.02	16 4.16
	5	0 14 17.8	21 12 2.13	1.90	— 0.23	106 11 22.23	24.00	+ 1.77	16 1.55
	6	0 14 22.9	21 16 3.93	3.60	— 0.33	105 53 21.20	16.00	— 5.20	16 4.32
	7	0 14 27.1	21 20 4.60	4.30	— 0.30	105 34 57.46	52.00	— 5.46	16 2.45
	8	0 14 30.4	21 24 4.44	4.10	— 0.34	105 16 9.87	13.00	+ 3.13	16 1.80
	9	0 14 33.1	21 28 3.63	3.20	— 0.43	104 7 19.28	17.00	— 2.28	16 2.37
	10	0 14 34.7	21 32 1.90	1.60	— 0.30	104 38 1.91	6.00	+ 4.09	16 1.40
	11	0 14 35.8	21 35 59.42	58.90	— 0.52	104 18 38.79	40.00	+ 1.21	16 1.57
	12	0 14 35.6	21 39 56.67	55.50	— 1.17	103 59 1.87	2.00	+ 0.13	16 1.40
	14	0 14 33.1	21 47 46.51	46.50	— 0.01	103 19 3.44	4.00	+ 0.56	16 0.83
	15	0 14 31.4	21 51 41.44	40.80	— 0.64	102 58 42.29	45.00	+ 2.71	16 0.48
	17	0 14 24.7	21 59 27.62	27.20	— 0.42	102 17 25.80	30.00	+ 4.20	
	18	0 14 20.3	22 3 19.98	19.40	— 0.58	101 56 30.07	36.00	+ 5.93	16 2.02
	19	0 14 15.2	22 7 11.26	10.80	— 0.46				16 2.28
	20	0 14 9.5	22 11 2.05	1.60	— 0.40	101 14 7.80	11.00	+ 3.20	16 2.30
	21	0 14 3.0	22 14 52.05	51.60	— 0.40	100 52 35.06	43.00	+ 7.84	16 3.57
	22	0 13 55.7	22 18 41.41	41.10	— 0.31	100 30 58.97	5.00	+ 6.03	16 3.16
	23	0 13 48.4	22 22 30.61	29.90	— 0.71	100 9 10.34	16.00	+ 5.66	16 2.48
	24	0 13 40.0	22 26 18.67	18.20	— 0.47	99 47 12.8	19.00	+ 6.15	16 1.67
	25	0 13 30.8	22 30 6.02	5.70	— 0.32	99 25 2.70	12.00	+ 9.30	16 2.57
	26	0 13 21.9	22 33 53.64	52.70	— 0.94	99 2 50.11	57.00	+ 6.89	16 2.34
	28	0 13 0				98 17 56.78	3.00	+ 6.22	
M	1	0 12 37.8	22 48 55.93	55.70	— 0.23	97 32 35.81	39.00	+ 3.19	16 2.77
	2	0 12 25.8	22 52 40.20	39.90	— 0.30	97 9 41.14	47.00	+ 5.86	16 2.85
	3	0 12 13.3	2 56 24.18	23.70	— 0.48	96 46 47.11	50.00	+ 2.89	16 2.25
	4	0 11 59.8	23 0 7.21	7.10	— 0.11	96 23 43.49	47.00	+ 3.51	16 1.80
	5	0 11 46.4	23 3 50.45	50.10	— 0.35	96 0 36.63	38.00	+ 1.37	16 3.16
	6	0 11 32.7	23 7 53.06	52.60	— 0.46	95 37 16.68	25.00	+ 8.32	16 1.80
	7	0 11 18.1	23 11 15.11	14.70	— 0.41	95 14 4.53	7.00	+ 2.47	16 2.88
	8	0 11 3.3	23 14 56.67	56.30	— 0.37	94 50 43.90	45.00	+ 1.10	16 1.81
	9	0 10 48.0	23 18 37.99	37.60	— 0.39	94 27 17.77	20.00	+ 2.23	16 1.10
	10	0 10 32.4	23 22 18.97	18.50	— 0.47	94 3 45.52	0.00	+ 4.48	16 2.16
	11	0 10 17.0	23 26 0.07	59.10	— 0.97	93 40 18.46	19.00	+ 0.54	16 6.45
	12	0 10 0.0	23 29 39.62	39.30	— 0.32	93 16 37.50	44.00	+ 6.50	16 2.34
	13	0 9 43.3	23 33 19.43	9.10	— 0.33	92 53 4.73	9.00	+ 4.27	16 1.20
	14	0 9 26.5	23 36 59.13	58.70	— 0.43	92 29 26.70	31.00	+ 4.30	16 1.67
	15	0 9 9.2	23 40 38.44	38.10	— 0.34	92 5 49.53	52.00	+ 2.47	16 1.82
	16	0 8 51.9	23 44 17.49	17.10	— 0.39	91 42 5.08	11.00	+ 5.92	16 0.66
	17	0 8 34.5	23 47 56.47	55.90	— 0.57	91 18 25.78	31.00	+ 5.22	15 56.92
	18	0 8 16.4	23 51 35.02	34.60	— 0.42	90 54 47.00	48.00	+ 1.00	16 0.60
	19	0 7 58.5	23 55 13.50	13.10	— 0.40	90 31 3.73	6.00	+ 2.27	
	20	0 7 40.5	23 58 52.11	51.50	— 0.61	90 7 21.77	2.00	+ 3.23	
	21	0 7 22.1	0 2 30.28	29.80	— 0.48	89 43 41.32	45.00	+ 3.68	16 1.07
	22	0 7 3.7	0 6 8.27	7.90	— 0.37	89 20 3.16	5.00	+ 1.84	16 2.16
	23	0 6 45.2	0 9 46.31	45.90	— 0.41	88 56 26.49	26.00	— 0.49	16 2.65
	24	0 6 26.8	0 13 24.39	23.90	— 0.49	88 32 42.71	50.00	+ 7.29	16 2.20
	25	0 6 8.2	0 17 2.32	1.90	— 0.42	88 9 13.08	16.00	+ 2.92	16 0.64
	26	0 5 49.6	0 20 40.24	39.90	— 0.34	87 45 39.67	43.00	+ 3.33	16 2.52
	27	0 5 31.1	0 24 18.21	17.90	— 0.31	87 22 9.40	14.00	+ 4.60	16 0.72
	28	0 5 12.5	0 27 56.14	55.90	— 0.24	86 58 49.37	47.00	— 2.37	16 3.68
	30	0 4 35.9	0 35 12.60	12.20	— 0.40	86 12 0.62	4.00	+ 3.38	
	31	0 4 17.5	0 38 50.74	50.40	— 0.34	85 48 49.76	49.00	— 0.76	16 1.68
April	1	0 3 59.7	0 42 29.22	28.60	— 0.62	85 25 33.66	39.00	+ 5.34	16 1.72
	2	0 3 41.5	0 46 7.69	7.10	— 0.59	85 2 35.00	33.00	— 2.00	16 0.84
	3	0 3 23.5	0 49 46.12	45.60	— 0.52	84 39 30.95	32.00	+ 1.05	16 1.32
	4	0 3 5.4	0 53 24.51	24.30	— 0.21	84 16 32.93	38.00	+ 5.07	16 2.34
	5	0 2 47.7	0 57 3.39	3.10	— 0.29	83 53 48.29	50.00	+ 1.71	15 59.34

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (Continued)

M S at T f	A R from	A R fr m	Erro f N A	N P D fr m	N P D from	E f N A	M
Ob rv lon	Ob rv l	N A.		Ob rv tl	N A		H S m d
1832							
April 6 0 2 30 3	1 0 42 48	42 10	— 0 38	83 31 3 77	7 00	+ 3 23	16 1 60
7 0 2 13 2	1 4 21 89	21 30	— 0 59	83 8 25 81	32 00	+ 6 19	16 1 46
8 0 1 56				82 45 59 26	3 00	+ 3 74	16 2 08
9 0 1 39				82 23 39 47	43 00	+ 3 53	15 58 77
10 0 1 22				82 1 31 89	31 00	— 0 89	16 2 52
11 0 1 5				81 39 17 69	25 00	+ 7 31	
12 0 0 48				81 17 25 18	28 00	+ 2 82	15 59 72
14 0 0 18				80 33 55 87	3 00	+ 7 13	16 0 28
15 0 0 2 4	1 33 43 40	43 30	— 0 10	80 12 29 51	33 00	+ 3 49	16 1 02
15 23 59 48 5	1 37 25 75	24 90	— 0 85	79 51 8 31	13 00	+ 4 69	15 59 60
16 23 59 33				79 30 1 02	3 00	+ 1 98	16 1 18
17 23 59 19				79 9 0 65	3 00	+ 2 35	16 3 60
18 23 59 5							15 59 9
19 23 58 52				78 27 6 59	37 00	+ 0 41	16 1 98
20 23 58 39				78 7 10 31	11 00	+ 0 69	16 1 07
21 23 58 27				77 46 52 26	56 00	+ 3 74	15 59 8
22 23 58 15				77 26 50 17	52 00	+ 1 83	16 1 67
23 23 58 4				77 7 0 22	1 00	+ 0 78	16 1 42
24 23 57 53				76 47 21 81	24 00	+ 2 19	16 0 02
25 23 57 42				76 27 57 79	58 00	+ 0 21	16 3 71
26 23 57 32				76 8 41 27	45 00	+ 0 73	
27 23 57 23				75 49 49 52	47 00	— 2 52	16 4 10
28 23 57 14				75 31 0 29	2 00	+ 1 71	16 2 72
29 23 57 6				75 12 29 78	31 00	+ 1 22	16 1 63
30 23 56 58				74 54 16 82	16 00	— 0 82	16 5 17
May 1 23 56 50				74 36 13 68	15 00	+ 1 32	16 4 90
2 23 56 44				74 18 21 86	28 00	+ 6 14	16 4 40
3 23 56 38				74 0 57 87	59 00	+ 1 13	16 3 76
4 23 56 32				73 43 39 40	46 00	+ 6 60	16 3 54
5 23 56 27				73 26 41 84	47 00	+ 5 16	16 1 44
6 23 56 22				73 10 2 48	5 00	+ 2 52	15 58 54
7 23 56 18				72 53 36 66	40 00	+ 3 34	
8 23 56 15				72 37 31 59	34 00	+ 2 41	16 0 04
10 23 56 9							16 2 54
11 23 56 8				71 50 53 72	56 00	+ 2 28	16 1 20
12 23 56 6 1	3 20 10 46	10 20	— 0 26	71 30 59 09	0 00	+ 0 91	16 0 60
13 23 56 6							16 1 26
14 23 56 6				71 7 2 57	5 00	+ 2 43	16 7 02
15 23 56 6				70 53 6 55	4 00	— 2 55	16 3 36
16 23 56 7				70 39 19 40	24 00	+ 4 60	15 57 90
17 23 56 9				70 26 0 19	3 00	+ 2 81	16 6 48
18 23 56 11				70 13 0 93	2 00	+ 1 07	15 57 80
19 23 56 14							16 2 00
20 23 56 17 5	3 51 53 69	53 10	— 0 9				16 2 45
21 23 56 21 3	3 55 54 12	53 50	— 0 62	69 36 1 03	1 00	— 0 03	16 2 33
22 23 56 25 9	3 59 55 17	54 50	— 0 67	69 21 22 56	23 00	+ 0 44	16 1 96
23 23 56 30 9	4 3 56 77	55 90	— 0 87	69 13 1 59	5 00	+ 3 41	
24 23 56 36				69 2 8 43	8 00	— 0 43	16 1 26
25 23 56 42				68 51 26 20	32 00	+ 5 80	16 6 14
26 23 56 49 0	4 16 4 58	3 70	— 0 88	68 41 22 97	19 00	— 3 97	16 0 14
28 23 57 30	4 24 11 64	11 40	— 0 24				
29 23 57 11 7	4 28 16 87	15 90	— 0 97	68 12 52 68	52 00	— 0 68	16 1 72
30 23 57 19 6	4 32 21 49	20 90	— 0 59	68 4 5 71	7 00	+ 1 29	16 2 03
31 23 57 28 4	4 36 27 01	26 20	— 0 81	67 55 47 73	47 00	— 0 73	16 1 42
June 1 23 57 37 0	4 40 32 24	31 90	— 0 34	67 47 47 03	47 00	— 0 03	16 2 96
23 57 47 3	4 44 38 78	38 00	— 0 78	67 40 17 36	14 00	— 3 36	16 2 52
3 23 57 57 1	4 48 45 34	44 50	— 0 84	67 33 1 76	5 00	+ 3 24	15 59 30

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTRE (*Continued*)

M S Time	A R f m	A R from	Er f N A	N P D f m	N P D f m	Er f N A	M
Ob l	Ob	N A		Ob rv	N A		H S mid.
1832	m						/
J e 4 23 58 66	4 52 51 52	51 40	— 0 12	67 26 17 01	16 00	— 1 01	15 59 04
5 23 58 17 6	4 56 58 89	58 40	— 0 49	67 19 51 54	51 00	— 0 54	16 3 98
6 23 58 28 5	5 1 6 37	5 80	— 0 57	67 13 51 43	51 00	— 0 43	
7 23 58 39 4	5 5 13 86	13 40	— 0 46	67 8 11 98	15 00	+ 3 02	
8 23 58 50 7	5 9 21 89	21 40	— 0 49	67 3 5 95	3 00	— 2 95	16 2 30
9 23 59 2 4	5 13 30 16	29 60	— 0 56	66 58 8 87	15 00	+ 6 13	16 1 33
10 23 59 14 6	5 17 38 91	38 00	— 0 91	66 53 50 92	51 00	+ 0 08	16 2 05
11 23 59 26 3	5 21 47 19	46 60	— 0 59	66 49 50 50	52 00	+ 1 50	16 3 05
12 23 59 38 6	5 25 56 03	55 20	— 0 83	66 46 16 60	18 00	+ 1 40	16 2 30
13 23 59 50 8	5 30 4 78	4 20	— 0 58	66 43 6 64	7 00	+ 0 36	15 59 60
15 0 0 3 4	5 34 14 08	13 40	— 0 68	66 40 21 56	20 00	— 1 56	16 0 46
16 0 0 16 2	5 38 23 34	22 50	— 0 84	66 37 57 28	1 00	+ 3 72	16 1 72
17 0 0 28				66 36 3 32	4 00	+ 0 68	15 59 93
18 0 0 41 2	5 46 41 46	41 20	— 0 26	66 34 28 95	33 00	+ 4 05	16 1 61
22 0 1 33				66 32 31 80	32 00	+ 0 20	16 2 00
23 0 1 46				66 33 3 90	4 00	+ 0 10	
24 0 1 58				66 34 7 67	2 00	— 5 67	16 1 72
26 0 2 24				66 37 14 23	10 00	— 4 23	15 58 30
27 0 2 37				66 39 19 22	23 00	+ 3 78	16 1 24
28 0 2 49				66 41 59 55	7 00	— 2 55	
30 0 3 13				66 48 21 13	23 00	+ 1 87	16 2 10
J ly 2 0 3 37				66 56 27 87	25 00	— 2 87	16 1 68
3 0 3 48				67 1 4 07	3 00	— 1 07	16 0 10
4 0 3 59				67 6 9 65	5 00	— 4 65	16 3 56
5 0 4 10				67 11 29 48	30 00	+ 0 52	16 2 11
6 0 4 20				67 17 19 07	20 00	+ 0 93	15 57 86
7 0 4 30				67 3 30 53	32 00	+ 1 47	15 54 90
16 0 5 39				68 36 47 99	43 00	— 4 99	15 58 07
20 0 5 58				69 18 51 29	53 00	+ 1 71	15 58 04
24 0 6 8 6	8 14 5 86	5 10	— 0 76	70 6 37 26	35 00	— 2 26	
25 0 6 9 4	8 18 3 34	2 80	— 0 54	70 19 23 60	21 00	— 2 60	16 0 60
26 0 6 9 8	8 22 0 19	59 80	— 0 39	70 32 32 86	28 00	— 4 86	16 1 02
28 0 6 9 2	8 29 52 89	52 50	— 0 39	70 59 40 30	37 00	— 3 30	16 1 86
30 0 6 5				71 28 4 53	3 00	— 1 53	16 3 48
31 0 6 3				71 42 45 29	42 00	— 3 29	16 0 58
A g 1 0 6 0				71 57 42 93	42 00	— 0 93	16 2 13
2 0 5 56				72 13 0 16	57 00	— 3 16	
3 0 5 52				72 28 27 49	29 00	+ 1 51	16 2 34
5 0 5 42				73 0 33 55	28 00	— 5 55	16 0 18
6 0 5 35				73 16 52 41	51 00	— 1 41	16 3 90
7 0 5 29				73 33 31 60	29 00	— 2 60	16 2 42
8 0 5 21				73 50 26 71	24 00	— 2 71	16 2 65
11 0 4 55				74 42 48 04	42 00	— 6 04	15 58 94
12 0 4 46				75 0 43 73	38 00	— 5 73	16 0 58
13 0 4 35 9	9 31 23 86	23 50	— 0 36	75 18 53 38	48 00	— 5 38	16 2 92
14 0 4 25 5	9 35 9 95	9 10	— 0 85	75 37 15 82	13 00	— 2 82	15 58 14
17 0 3 50 1	9 46 24 37	23 40	— 0 97	76 33 1 50	47 00	— 4 50	16 0 48
18 0 3 37 0	9 50 7 78	7 00	— 0 78	76 53 6 69	1 00	— 2 69	16 0 20
19 0 3 23 6	9 53 50 86	50 20	— 0 66	77 12 35 6	34 00	— 1 65	
20 0 3 10 0	9 57 33 69	32 90	— 0 79	77 32 18 79	17 00	— 1 79	16 1 50
21 0 2 55 2	10 1 15 59	15 30	— 0 29	77 52 11 32	11 00	— 0 32	16 2 80
22 0 2 40 8	10 4 57 57	57 10	— 0 47	78 12 20 54	18 00	— 2 54	16 2 01
23 0 2 25 5	10 8 38 75	38 50	— 0 25	78 32 36 47	35 00	— 1 47	15 59 88
25 0 1 54 5	10 16 0 87	0 20	— 0 67	79 13 48 29	43 00	— 5 29	
27 0 1 21 2	10 23 20 62	20 00	— 0 62	79 55 32 71	31 00	— 1 71	16 3 90
28 0 1 4 4	10 27 0 20	59 30	— 0 90	80 16 38 77	40 00	+ 1 23	16 0 60
29 0 0 46 7	10 30 39 24	38 40	— 0 84	80 38 3 50	59 00	— 4 50	

RIGHT ASCENSION AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (Continued)

M	S	lar	T	m	f	A	R	f	m	A	R	f	m	E	f	N	A	N	P	D	f	m	N	I	D	f	m	E	r	r	o	r	f	N	A	M
Ob						Ob	r	v	t	N	A							Ob	r	v	t	N	A													
1832						m												/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/		
Aug	30	0	0	28	9	10	34	17	7	17	00	—	0	75	80	59	27	11	26	00	—	1	11	16	1	68										
	31	0	0	10	8	10	37	56	23	55	30	—	0	93	81	21	06	1	100	—	0	39														
S	pt	1	23	59	33	10	52	25	74	25	30	—	0	44	82	4	35	19	38	00	—	2	81	15	59	20										
		3	23	58	54	4	10	59	39	23	38	80	—	0	43	82	48	43	61	43	00	—	0	61	16	0	82									
		5	23	58	14	8	10	59	39	23	38	80	—	0	43	83	33	18	32	17	00	—	1	32	15	9	30									
		6	23	57	54	9	11	3	15	93	15	20	—	0	73	83	55	45	76	44	00	—	1	76	16	2	54									
		8	23	57	14	0	11	10	27	91	27	30	—	0	61	84	40	57	82	54	00	—	3	82	16	0	12									
		9	23	56	53	7	11	14	4	16	3	10	—	1	06	85	3	43	06	38	00	—	5	06	16	3	8									
		13	23	55	29											86	35	23	36	20	00	—	3	36												
		11	23	55	8	2	11	32	1	05	0	70	—	0	35	86	58	30	03	26	00	—	4	03	16	4	16									
		15	23	54	46	9	11	35	36	33	36	10	—	0	23	87	21	39	03	35	00	—	4	03	16	0	18									
		19	23	53	22	9	11	49	58	33	57	90	—	0	43	88	51	44	09	42	00	—	2	59	16	0	22									
		20	23	53	2	1	11	53	34	02	33	00	—	0	52	89	18	5	79	5	00	—	0	79	16	0	90									
		21	23	52	41		11	57	12	62	9	10																								
		22	23	52	20	9	12	0	45	77	45	00	—	0	77	90	4	57	51	53	00	—	4	51	1	9	74									
		23	23	52	0	1	12	4	21	46	21	00	—	0	46	90	28	19	96	19	00	—	0	96	16	1	70									
		24	23	51	39	7	12	7	57	55	57	20	—	0	35	90	51	46	32	45	00	—	1	32	16	2	28									
		25	23	51	19	1	12	11	33	26	33	30	—	0	04	91	15	14	09	11	00	—	3	09	16	3	98									
		26	23	50	59	8	12	15	10	66	9	80	—	0	86	91	38	35	05	36	00	—	0	95	16	1	61									
		27	23	50	39	6	12	18	46	92	46	40	—	0	52	92	2	2	56	1	00	—	1	56												
		29	23	50	0	7	12	26	0	94	0	20	—	0	74	92	48	49	59	48	00	—	1	59	16	2	07									
		30	23	49	41	0	12	29	37	70	37	60	—	0	10	93	12	4	92	8	00	—	3	08	15	59	43									
Oct	1	23	49	23	2	12	33	16	41	15	20	—	1	21	93	35	30	26	2	00	—	3	26	16	4	17										
	3	23	48	45	6	12	40	32	07	31	50	—	0	57	94	21	56	45	5	00	—	1	45													
	4	23	48	27											94	45	10	03	5	00	—	5	03	16	1	3										
	5	23	48	9											90	8	11	71	10	00	—	1	71	16	1	7										
	6	23	47	52	5	12	51	28	31	28	10	—	0	21	9	31	14	57	12	00	—	2	57	16	0	84										
	7	23	47	36	9	12	55	9	28	7	90	—	1	38	90	54	12	78	10	00	—	2	78	16	1	0										
	8	23	47	20	1	12	58	48	97	48	00	—	0	97	96	17	8	63	3	00	—	5	63	16	3	85										
	10	23	46	48	6	13	6	10	42	9	50	—	0	92	97	2	36	08	35	00	—	1	08	16	3	10										
	11	23	46	3	6	13	9	52	25	51	30	—	0	95	97	25	17	32	12	00	—	5	32	16	4	56										
	12	23	46	19	3	13	13	34	20	33	20	—	1	00	97	47	44	82	43	00	—	1	82	16	1	51										
	13	23	46	5	3	13	17	16	69	15	80	—	0	89	98	10	12	19	8	00	—	4	19													
	14	23	45	51	6	13	20	9	66	59	00	—	0	66	98	32	31	19	26	00	—	0	19	16	0	72										
	18	23	45	4											100	0	23	44	23	00	—	0	44	16	3	72										
	19	23	44	54	0	13	39	44	51	43	70	—	0	81																						
	20	23	44	45	0	13	43	31	90	30	60	—	1	30	100	43	37	05	32	00	—	5	00	15	59	82										
	21	23	44	35	8	13	47	19	30	18	20	—	1	10	101	4	52	00	52	00	—	0	00	16	1	20										
	22	23	44	27	3	13	51	7	33	6	40	—	0	93	101	26	0	08	2	00	—	1	92	16	2	90										
	23	23	44	19	7	13	54	56	51	55	60	—	0	91	101	47	3	71	2	00	—	1	71	16	1	90										
	24	23	44	12	6	13	58	45	82	45	20	—	0	62	102	7	52	65	51	00	—	1	65	16	2	83										
	25	23	44	6	7	14	2	36	37	35	50	—	0	87	102	28	32	49	8	00	—	4	49	16	3	22										
	26	23	44	1	4	14	6	27	71	26	70	—	1	01	102	48	56	42	54	00	—	2	42	16	2	58										
	27	23	43	56	6	14	10	19	51	18	60	—	0	91	103	9	9	24	8	00	—	1	24	16	1	10										
	28	23	43	52	4	14	14	12	06	11	40	—	0	66	103	29	11	62	10	00	—	1	62	16	2	36										
	29	23	43	49	4	14	18	5	38	4	50	—	0	88	103	49	1	81	59	00	—	2	81	16	1	04										
	30	23	43	46	6	14	21	59	27	58	70	—	0	57	104	8	32	58	34	00	—	1	42	16	2	56										
	31	23	43	45	0	14	20	4	19	53	50	—	0	69	104	27	58	80	56	00	—	2	80	16	0	35										
Nov	1	23	43	45	0	14	29	50	66	49	20	—	1	46	104	47	3	45	3	00	—	0	45	16	1	42										
	2	23	43	44	4	14	33	46	46	45	70	—	0	76	105	5	58	6	56	00	—	2	62	16	1	44										
	3	23	43	44											105	24	35	73	35	00	—	0	73	16	2	50										
	4	23	43	46	9	14	41	42	04	40	90	—	1	14	105	42	58	75	58	00	—	0	75	16	1	52										
	5	23	43	48											106	1	6	80	3	00	—	3	80	15	57	63										
	8	23	44	0											106	53	51	51	49	00	—	2	51	16	0											

RIGHT ASCENSIONS AND NORTH POLAR DISTANCE OF THE SUN'S CENTER (Cot d)

M	S	Time	A R f m	A R f m	Err f N A	N P D f m	N P D f m	E f N A	M
O	t		Ob rv l	N A		Ob rv tl	N A		H S mid
1832		m				/			//
Nov	13	23 44 37							16 3 82
	14	23 44 47 9	15 22 8 81	8 00	— 0 81				16 0 70
	15	23 44 58 8	15 26 16 15	15 40	— 0 75	108 46 32 40	29 00	— 3 40	
	16	23 45 9 9	15 30 24 83	23 70	— 1 13	109 1 24 0	19 00	— 5 05	15 59 30
	17	23 45 23 4	15 34 34 01	33 00	— 1 01	109 15 48 02	47 00	— 1 02	15 59 00
	18	23 45 36 7	15 38 43 98	43 10	— 0 88	109 29 57 25	55 00	— 2 25	16 1 34
	20	23 46 6 7	15 47 6 94	40	— 1 54	109 57 8 73	8 00	— 0 73	16 1 77
	21	23 46 22 0	15 51 19 09	18 10	— 0 99	110 10 12 45	12 00	— 0 45	15 59 66
	22	23 46 38 7	15 55 32 45	31 40	— 1 05	110 22 2 08	3 00	+ 0 92	15 59 30
	23	23 46 5				110 3 13 67	11 00	— 2 67	16 0 57
	24	23 47 14 2	16 4 1 14	0 40	— 0 74	110 47 4 79	7 00	+ 2 21	16 0 40
	25	23 47 33 2	16 8 16 62	15 80	— 0 82	110 58 40 34	39 00	— 1 34	16 0 92
	26	23 47 53 0	16 12 33 13	32 20	— 0 93	111 9 49 8	48 00	— 1 8	16 1 50
	29	23 48 56 2	16 25 26 01	25 20	— 0 81	111 40 52 8	48 00	— 4 58	16 1 47
	30	23 49 17 9	16 29 44 5	44 40	— 0 1	111 50 24 21	20 00	— 4 21	1 59 62
Dec	3	23 50 29 4	16 42 45 73	44 80	— 0 93				16 3 16
	4	23 50 54 2	16 47 7 07	6 10	— 0 97				
	5	23 51 19				112 31 26 68	28 00	+ 1 32	
	6	23 51 45 2	16 55 51 35	50 40	— 0 95	112 38 27 77	24 00	— 3 77	16 0 87
	7	23 52 11 7	17 0 14 32	13 00	— 1 32	112 44 2 63	3 00	+ 0 37	15 59 22
	8	23 52 37							16 1 60
	9	23 53 0 4							16 1 04
	10	23 53 32							16 0 90
	11	23 54 0 6	17 17 50 02	49 20	— 0 82				
	12	23 54 28				113 10 32 80	32 00	— 0 80	16 1 10
	13	23 54 57 9	17 26 40 45	39 40	— 1 0				15 59 25
	14	23 55 27 0	17 31 6 17	5 00	— 1 17				16 1 98
	15	23 55 56 4	17 35 32 15	31 00	— 1 15	113 20 21 32	20 00	+ 3 68	16 1 23
	16	23 56 25 5	17 39 57 95	57 10	— 0 85	113 22 46 88	46 00	— 0 88	16 1 34
	17	23 56 54 9	17 44 24 04	23 50	— 0 54	113 24 38 25	39 00	+ 0 75	16 0 87
	18	23 57 25 2	17 48 51 02	50 00	— 1 02	113 26 9 46	4 00	— 5 46	1 59 12
	19	23 57 54							16 1 37
	20	23 58 25 4	17 57 44 54	43 40	— 1 14	113 27 31 66	31 00	— 0 60	16 1 40
	21	23 58 55				113 27 34 01	31 00	— 3 01	15 59 72
	22	23 59 25				113 27 2 43	3 00	+ 0 57	15 59 62
	23	23 59 55				113 26 12 53	8 00	— 4 53	15 59 94
	25	0 0 25				113 24 0 05	46 00	— 4 05	16 0 72
	26	0 0 55 4	18 19 57 80	57 00	— 0 80				16 0 23
	27	0 1 25							16 0 72
	28	0 1 5 0	18 28 50 51	49 60	— 0 91				15 9 95
	29	0 2 24				113 14 22 72	21 00	— 1 72	15 59 46
1833									
Jan	2	0 4 19 1	18 50 58 28	57 50	— 0 78	112 56 30 03	36 00	+ 5 97	16 2 60
	3	0 4 46 7	18 55 22 41	21 90	— 0 51	112 50 59 68	0 00	+ 0 32	16 0 28
	4	0 5 14 1	18 59 46 38	45 90	— 0 48	112 44 51 45	57 00	+ 5 55	16 0 20
	5	0 5 40 7	19 4 9 89	9 70	— 0 19	112 38 30 08	27 00	— 3 08	16 1 88
	6	0 6 7 3	19 8 33 0	32 90	— 0 15	112 31 27 22	30 00	+ 2 78	16 4 6
	7	0 6 33 5	19 12 55 94	55 70	— 0 24	112 24 7 42	7 00	— 0 42	16 2 72
	8	0 6 59 4	19 17 18 38	17 90	— 0 48	112 16 10 31	16 00	+ 5 69	15 59 34
	9	0 7 24 2	19 21 39 77	39 60	— 0 17	112 7 55 55	0 00	+ 4 45	16 1 24
	10	0 7 49 0	19 26 1 17	0 70	— 0 47	111 59 15 77	17 00	+ 1 23	16 0 44
	11	0 8 13				111 50 5 85	9 00	+ 3 15	16 1 73
	12	0 8 36 3	19 34 41 72	41 40	— 0 32	111 40 32 78	36 00	+ 3 22	16 2 70
	14	0 9 21 6	19 43 20 34	19 70	— 0 64	111 20 13 38	13 00	— 0 38	16 2 13
	15	0 9 43				111 9 22 81	24 00	+ 1 19	16 0 0
	16	0 10 3 9	19 51 55 79	55 50	— 0 29	110 58 8 22	11 00	+ 2 78	16 2 80
	17	0 10 24				110 46 31 72	34 00	+ 2 28	16 2 40
	18	0 10 43				110 34 30 56	33 00	+ 2 44	16 1 85

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (<i>C' true d</i>)													
M	S	I	Time	f	A. R. f. m.	A. R. f. m.	E	f. N. A.	N. l. D. f. m.	N. P. D. f. m.	Erro	f. N. A.	M. an
Ob					Ob	rv	tion.	N. A.	Ob		N. A.		H. Semid
1833													
Jan	19	0	11	2					110 22 6 51	9 00	+ 2 49		16 2 40
	20	0	11	20 8	20 8 59 05	58 60	— 0 45		110 9 24 89	22 00	— 2 89		15 59 73
	21	0	11	37 9	20 13 12 76	12 50	— 0 26		109 56 10 23	13 00	+ 2 77		15 59 76
	22	0	11	54 4	20 17 26 00	25 70	— 0 30		109 42 38 61	41 00	+ 2 39		16 1 20
	23	0	12	10 2	20 21 38 37	38 20	— 0 17		109 28 44 80	47 00	+ 2 20		16 0 58
	24	0	12	24 7	20 25 49 63	49 80	+ 0 17		109 14 30 38	32 00	+ 1 62		
	25	0	12	39 5	20 30 0 85	0 50	— 0 35		108 59 55 09	54 00	— 1 09		
	26	0	12	52 7	20 34 10 76	10 50	— 0 26		108 45 1 72	58 00	— 3 72		16 2 42
	27	0	13	5					108 29 37 72	39 00	+ 1 28		16 3 10
	28	0	13	17 2	20 42 28 16	27 70	— 0 46						16 1 75
	29	0	13	27 9	20 46 35 63	35 30	— 0 33		107 58 1 31	4 00	+ 2 69		16 3 48
	30	0	13	37 8	20 50 42 06	41 90	— 0 16		107 41 46 67	49 00	+ 2 33		15 59 90
	31	0	13	47					107 25 9 27	13 00	+ 3 73		16 0 10
F b	1	0	13	55 5	20 58 52 88	52 60	— 0 28		107 8 21 70	20 00	— 1 70		16 3 13
	2	0	14	3 1	21 2 56 99	56 60	— 0 39		106 51 5 09	8 00	+ 2 91		16 3 47
	3	0	14	9					106 33 38 21	38 00	— 0 21		15 59 25
	4	0	14	15 8	21 11 2 83	2 20	— 0 63						16 0 58
	5	0	14	20 5	21 15 4 13	3 80	— 0 33		105 57 44 88	49 00	+ 4 12		16 2 36
	6	0	14	24 6	21 19 4 94	4 70	— 0 24		105 39 28 44	29 00	+ 0 56		16 2 07
	7	0	14	28 0	21 23 4 89	4 70	— 0 19		105 20 56 26	52 00	— 4 26		16 2 23
	8	0	14	30 7	21 27 4 06	3 80	— 0 26		105 2 1 19	2 00	+ 0 81		16 1 72
	9	0	14	32 7	21 31 2 59	2 20	— 0 39		104 42 54 71	54 00	— 0 71		15 57 88
	10	0	14	33 0	21 34 5 51	59 80	+ 0 29		104 23 31 56	35 00	+ 3 44		15 58 49
	11	0	14	33					104 4 0 41	58 00	— 2 41		16 0 83
	12	0	14	33 5	21 42 53 15	52 70	— 0 45		103 44 7 04	10 00	+ 2 36		16 0 60
	13	0	14	32 5	21 46 48 61	48 10	— 0 51		103 24 4 52	6 00	+ 1 48		
	14	0	14	30 1	21 50 43 04	42 90	— 0 14						16 1 65
	15	0	14	27 4	21 54 36 82	36 80	— 0 02		102 43 16 69	20 00	+ 3 31		15 58 72
	16	0	14	24 2	21 58 30 01	29 90	— 0 11		102 22 40 18	39 00	— 1 18		16 0 64
	17	0	14	20 2	22 2 22 58	22 30	— 0 28		102 1 44 71	46 00	+ 1 29		16 0 52
	18	0	14	15 5	22 6 14 37	14 00	— 0 37		101 40 39 03	41 00	+ 1 97		16 2 54
	19	0	14	9 8	22 10 5 21	5 00	— 0 21		101 19 23 09	26 00	+ 2 91		15 59 37
	20	0	14	3					100 57 55 34	59 00	+ 3 66		16 1 62
	21	0	13	57 1	22 17 45 75	45 20	— 0 55		100 36 21 04	22 00	+ 0 96		16 1 84
	22	0	13	49					100 14 31 74	37 00	+ 2 26		16 0 43
	23	0	13	41					99 52 40 44	40 00	— 0 44		16 1 28
	24	0	13	32					99 30 34 44	36 00	+ 1 56		16 2 80
	25	0	13	23 5	22 32 58 11	57 70	— 0 41		99 8 22 81	24 00	+ 1 19		15 58 95
	26	0	13	13 5	22 36 44 77	44 40	— 0 37		98 46 0 24	2 00	+ 1 76		16 2 16
	27	0	13	2 8	22 40 30 64	30 30	— 0 34		98 23 33 31	33 00	— 0 31		16 0 20
	28	0	12	52 0	22 44 16 18	15 70	— 0 48		98 0 54 39	57 00	+ 2 61		16 0 82
Mar	1	0	12	40 1	22 48 1 02	0 70	— 0 32		97 38 13 19	14 00	+ 0 81		16 0 98
	2	0	12	28 1	22 51 45 46	45 00	— 0 46		97 15 22 28	26 00	+ 3 72		15 59 90
	3	0	12	15 4	22 55 29 32	28 80	— 0 52		96 52 31 25	30 00	— 1 25		16 1 06
	4	0	12	2 0	22 59 1 55	12 20	— 0 35		96 29 27 17	30 00	+ 2 83		16 2 24
	5	0	11	48 1	23 2 55 14	55 10	— 0 04		96 6 21 71	23 00	+ 1 29		16 0 84
	6	0	11	34 4	23 6 37 87	37 50	— 0 37		95 43 10 08	12 00	+ 1 92		16 1 18
	7	0	11	19 9	23 10 19 71	19 40	— 0 31		95 19 54 56	56 00	+ 1 44		16 0 90
	8	0	11	5					94 56 35 08	35 00	— 0 08		15 59 96
	9	0	10	49 8	23 17 42 63	42 20	— 0 43		94 33 13 39	11 00	— 2 39		16 1 02
	10	0	10	34 2	23 21 23 59	23 10	— 0 49		94 9 44 02	44 00	— 0 02		16 0 70
	11	0	10	18 3	23 25 4 17	3 70	— 0 47		93 46 9 28	13 00	+ 3 72		16 1 94
	12	0	10	2 0	23 28 44 54	44 10	— 0 44						16 0 06
	13	0	9	45 2	23 32 24 34	24 10	— 0 24		92 59 1 56	4 00	+ 2 44		15 59 82
	14	0	9	28					92 35 24 93	26 00	+ 1 07		16 0 95
	15	0	9	11 5	23 39 43 47	43 30	— 0 17		92 11 47 31	47 00	— 0 31		16 1 30
	16	0	8	54					91 48 3 53	6 00	+ 2 47		

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (Continued)

M	S	Time	Right Ascension	Right Ascension	E	North Polar Distance	North Polar Distance	E	M
Obs	ti		Obs	N A	f N A	Obs	N A	f N A	H Sem d
1833									
Mar	18	0 8 19				91 0 38 75	41 00	+ 2 25	16 2 0
	19	0 8 1 2	23 54 19 30	19 20	- 0 10	90 36 55 36	58 00	+ 2 64	16 0 15
	20	0 7 43				90 13 14 74	16 00	+ 1 26	16 0 90
	21	0 7 25 5	0 1 36 46	36 10	- 0 36	89 49 32 4	34 00	+ 1 55	16 1 6
	22	0 7 7 1	0 5 14 68	14 40	- 0 28	89 25 51 51	53 00	+ 1 49	16 0 23
	23	0 6 48 9	0 8 52 94	52 60	- 0 34	89 2 14 6	13 00	- 1 65	15 59 08
	24	0 6 30				88 38 34 48	35 00	+ 0 52	16 2 40
	25	0 6 12 0	0 16 9 05	8 80	- 0 2	88 14 59 88	0 00	+ 0 12	15 59 95
	26	0 5 53 3	0 19 46 96	46 90	- 0 06	87 51 23 45	27 00	+ 3 5	16 2 2
	27	0 5 35 1	0 23 25 21	24 90	- 0 31	87 27 54 41	56 00	+ 1 59	16 0 04
	28	0 5 16				87 4 28 08	29 00	+ 0 92	16 0 10
	29	0 4 57 9	0 30 41 03	40 80	- 0 23	86 41 6 17	5 00	- 1 17	16 0 00
	30	0 4 39 4	0 34 18 96	18 80	- 0 16	86 17 41 3	46 00	+ 4 47	15 9 83
	31	0 4 21				85 54 31 78	30 00	- 1 78	15 59 95
Apr	1	0 4 2 4	0 41 34 99	35 00	+ 0 01	85 31 17 41	19 00	+ 1 59	16 0 64
	2	0 3 44 2	0 45 13 33	13 20	- 0 13	85 8 15 60	14 00	- 1 60	16 0 50
	3	0 3 26 9	0 48 51 63	51 50	- 0 13	84 4 12 20	13 00	+ 0 80	16 1 10
	4	0 3 8 0	0 52 30 08	30 00	- 0 08	84 22 1 96	17 00	+ 1 04	16 2 10
	5	0 2 50 0	0 56 8 63	8 60	- 0 03	83 59 24 90	29 00	+ 4 10	15 59 62
	6	0 2 32 9	0 59 47 96	47 40	- 0 56	83 36 43 45	46 00	+ 2 55	16 1 26
	7	0 2 15 1	1 3 26 81	26 50	- 0 31	83 14 7 55	9 00	+ 1 4	16 2 22
	8	0 1 58 0	1 7 6 06	5 70	- 0 36	82 51 37 13	40 00	+ 2 87	15 59 86
	9	0 1 40 7	1 10 45 34	45 10	- 0 24	82 29 15 35	18 00	+ 2 6	16 2 18
	10	0 1 24				82 7 3 80	2 00	- 1 80	16 0 08
	11	0 1 7				81 44 52 38	5 00	+ 2 62	
	12	0 0 19 8	1 29 7 01	6 90	- 0 11	80 39 24 93	24 00	- 0 93	16 1 77
	13	0 0 4				80 17 53 49	51 00	- 2 49	16 0 26
	14	23 59 50				79 56 29 62	28 00	- 1 62	15 59 64
	15	23 59 35 7	1 40 12 38	12 00	- 0 38	79 35 18 17	15 00	- 3 17	16 0 0
	16	23 59 21				79 14 1 09	12 00	- 3 09	16 1 00
	17	23 59 7 7	1 47 37 39	37 40	+ 0 01	78 53 19 14	19 00	- 0 14	16 1 84
	18	23 58 54 6	1 1 20 78	20 60	- 0 18	78 32 37 64	39 00	+ 1 36	15 59 64
	19	23 58 41				78 12 6 77	8 00	+ 1 23	16 0 64
	20	23 58 29 4	1 58 48 71	48 50	- 0 21	77 51 47 17	50 00	+ 2 83	16 0 10
	21	23 58 17 6	2 2 33 45	33 10	- 0 35	77 31 39 38	43 00	+ 3 62	16 0 73
	22	23 58 6				77 11 47 17	49 00	+ 1 83	16 4 57
	23	23 57 55 1	2 10 3 98	3 60	- 0 38	76 52 5 33	8 00	+ 2 67	16 0 00
	24	23 57 34 2	2 17 36 10	36 00	- 0 10	76 13 24 70	23 00	- 1 70	16 1 26
	25	23 57 24 5	2 21 22 97	22 90	- 0 07	75 54 19 93	22 00	+ 2 07	16 0 68
	26	23 57 15				75 35 34 79	34 00	- 0 79	16 0 90
	27	23 57 6 5	2 28 57 94	8 10	+ 0 16	75 16 57 18	0 00	+ 2 82	16 0 84
	28	23 56 58 7	2 32 46 59	46 40	- 0 19	74 58 42 24	43 00	+ 0 76	15 57 78
May	1	23 56 51 1	2 36 35 61	35 50	- 0 11	74 40 37 51	39 00	+ 1 49	16 4 40
	2	23 56 44				74 22 51 93	50 00	+ 1 93	15 58 97
	3	23 56 37 5	2 44 15 21	15 10	- 0 11				16 0 04
	4	23 56 31 5	2 48 5 83	5 70	- 0 13				16 0 75
	5	23 56 26				73 30 59 20	57 00	- 2 20	15 9 73
	6	23 56 21				73 14 11 38	13 00	+ 1 62	15 59 70
	7	23 56 17				72 57 42 44	43 00	+ 0 56	16 0 28
	8	23 56 13 2	3 3 33 74	33 90	+ 0 16	72 41 31 94	32 00	+ 0 06	15 59 83
	9	23 56 10 4	3 7 27 45	27 50	+ 0 05	72 25 37 10	38 00	+ 0 90	16 1 43
	10	23 56 7 9	3 11 21 58	21 50	- 0 08	72 10 6 40	0 00	- 6 40	16 4 13
	11	23 56 6 5	3 15 16 76	16 20	- 0 56				16 0 55
	12	23 56 5 0	3 19 11 48	11 30	- 0 18	71 39 37 28	39 00	+ 1 72	15 59 53
	13	23 56 4				71 24 6 05	58 00	+ 1 95	16 0 67
	14	23 56 5				70 56 28 29	28 00	- 0 29	16 1 17
	15	23 56 6				70 42 45 20	43 00	- 2 20	16 3 80

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN CENTER (Continued)							
Mars last Time of Observation	Right Ascension	Right Ascension N A	Error of N A	North Polar Distance of m	North Polar Distance of m N A	Error of N A	Mars H S mid
1833							
May 17 23 56 7				70 29 13 94	16 00	+ 2 06	16 2 94
18 23 56 9				70 16 10 34	10 00	- 0 34	16 0 40
21 23 56 19				69 38 48 59	52 00	+ 3 41	16 0 86
22 23 56 24 0	3 58 56 24	55 90	- 0 34	69 27 11 61	8 00	- 3 61	16 1 48
23 23 56 29				69 15 42 45	45 00	+ 2 55	16 0 84
24 23 56 34				69 4 43 31	42 00	- 1 31	
25 23 56 40				68 53 59 92	2 00	+ 2 08	16 1 2
27 23 56 53				68 33 47 26	47 00	- 0 25	16 1 08
28 23 57 0				68 24 8 08	13 00	+ 4 92	
29 23 57 7 7	4 27 15 94	15 90	- 0 04	68 14 59 70	1 00	+ 1 30	16 2 23
30 23 57 16 2	4 31 21 02	20 60	- 0 42	68 6 13 22	12 00	- 1 22	16 3 11
31 23 57 24 9	4 35 26 35	25 80	- 0 55	67 57 47 10	46 00	1 10	16 1 24
June 1 23 57 33 4	4 39 31 27	31 20	- 0 07	67 49 42 45	43 00	+ 0 55	16 4 14
2 23 57 42 6	4 43 37 11	37 10	- 0 04	67 42 3 00	3 00	0 00	16 2 53
3 23 57 52 2				67 34 47 46	46 00	- 1 46	16 2 52
4 23 58 2 2				67 27 52 25	52 00	- 0 25	16 2 58
5 23 58 12 6				67 21 23 33	23 00	- 0 33	16 1 64
6 23 58 23 3				67 15 16 98	16 00	- 0 98	16 2 40
7 23 58 34 3				67 9 37 12	34 00	- 3 12	16 1 92
8 23 58 46 5	5 8 19 65	19 60	- 0 05	67 4 16 07	16 00	- 0 07	16 2 90
10 23 59 9 3	5 16 36 61	36 30	- 0 31	66 54 52 88	52 00	- 0 88	
11 23 59 21 3	5 20 45 15	44 90	- 0 25	66 50 48 85	46 00	- 2 85	16 3 18
12 23 59 33 8	5 24 54 22	53 80	- 0 42	66 47 7 98	6 00	- 1 98	16 1 94
13 23 59 46 2	5 29 3 14	2 90	- 0 24	66 43 51 40	49 00	- 2 40	16 3 16
19 0 0 50				66 33 39 01	35 00	- 4 01	16 0 72
20 0 1 3				66 32 47 11	47 00	- 0 11	16 3 48
21 0 1 16				66 32 25 57	24 00	- 1 57	16 2 37
22 0 1 29				66 32 30 32	26 00	- 4 32	16 1 60
23 0 1 42 9	6 6 29 4	28 80	- 0 41	66 32 53 92	52 00	- 1 92	15 59 34
25 0 2 8				66 35 1 88	58 00	- 3 88	
26 0 2 21				66 36 41 14	38 00	- 3 14	16 2 25
27 0 2 33				66 38 47 24	43 00	- 4 24	16 2 16
28 0 2 46				66 41 16 30	14 00	- 2 30	16 3 58
29 0 2 58 3	6 31 42 0	23 60	- 0 60	66 44 13 08	8 00	- 5 08	16 1 66
30 0 3 10				66 47 31 30	27 00	- 4 30	
July 1 0 3 21				66 1 14 28	9 00	- 5 28	16 1 6
2 0 3 33	6 43 48 73	48 40	0 33	66 55 20 78	17 00	- 3 78	16 0 94
3 0 3 43 9	6 47 56 14	56 20	+ 0 06	66 59 54 00	49 00	5 00	16 2 36
5 0 4 5 7	6 56 10 97	10 80	- 0 17	67 10 4 08	4 00	- 0 08	16 1 24
7 0 4 26				67 22 1 72	55 00	- 6 72	16 1 25
8 0 4 35 6	7 8 30 58	30 40	0 18	67 28 28 12	25 00	- 3 12	
9 0 4 45				67 35 22 03	20 00	- 2 03	16 0 26
12 0 5 10 1	7 24 51 43	51 40	- 0 03	67 58 19 46	21 00	+ 1 54	
13 0 5 17 9	7 28 55 82	55 60	- 0 22	68 6 50 74	47 00	- 3 4	
15 0 5 32				68 24 45 85	46 00	+ 0 15	16 0 02
16 0 5 38				68 34 24 11	19 00	- 5 11	16 3 98
17 0 5 43				68 44 15 83	14 00	- 1 83	16 1 92
18 0 5 48				68 54 36 16	31 00	- 5 16	16 3 70
19 0 5 53				69 5 8 59	8 00	- 0 59	16 4 40
20 0 5 57				69 16 11 76	8 00	- 3 76	16 1 26
21 0 6 1				69 27 26 97	28 00	+ 1 03	15 58 18
23 0 6 6				69 51 15 68	11 00	- 4 68	
25 0 6 9 6	8 17 64 7	90	0 52				
27 0 6 10 0	8 24 59 8	59 50	- 0 35	0 42 37 34	37 00	- 0 34	16 1 94
28 0 6 9 1	8 28 50 62	55 40	0 22	70 56 19 34	15 00	- 4 34	16 2 67
29 0 6 8				71 10 17 95	12 00	- 5 95	16 1 94
30 0 6 6				71 24 28 26	29 00	+ 0 74	15 59 98

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (Cont d)

M	S	Time	A R f m	A R from	Ero f N A	N I D f m	N P D f m	Ero f N A	M
Ob	H		Ob	N A		Ob	N A		H S mid
1833									
O t	15	23 45 42.8	13 23 50.19	49.90	— 0.29	98 49 25.17	26.00	+ 0.83	16 1.55
	17	23 45 19.0	13 31 19.47	19.10	— 0.37	99 33 32.39	30.00	— 2.39	16 1.38
	18	23 45 8.0	13 35 5.13	4.60	— 0.53	99 55 16.37	20.00	+ 3.63	16 1.50
	20	23 44 47				100 38 33.05	31.00	— 2.05	
	21	23 44 38.2	13 46 25.03	24.80	— 0.23	100 59 48.45	53.00	+ 4.55	1 59.54
	22	23 44 29.4	13 50 12.57	12.60	+ 0.03	101 21 4.99	5.00	+ 0.01	16 1.68
	23	23 44 21.7	13 54 1.50	1.30	— 0.20	101 42 5.81	6.00	+ 0.19	16 2.63
	30	23 43 46.8	14 21 2.28	2.20	— 0.08	104 3 55.94	55.00	— 0.94	16 1.10
	31	23 43 45				104 23 17.43	20.00	+ 2.57	16 1.52
Nov									
	2	23 43 43				105 1 25.72	26.00	+ 0.28	
	3	23 43 44				105 20 6.10	9.00	+ 2.90	16 0.97
	4	23 43 46.0	14 40 44.19	43.60	— 0.59				16 1.98
		23 43 48.1	14 44 42.88	42.30	— 0.58	105 56 46.83	48.00	+ 1.17	16 2.43
	13	23 44 36				108 12 13.08	15.00	+ 1.92	16 3.08
	15	3 44 57				108 42 59.20	2.00	+ 2.80	
	16	23 45 8.7	15 29 25.78	2.60	— 0.18				16 1.70
	17	23 45 21.5	15 33 35.32	34.70	— 0.62	109 12 24.95	29.00	+ 4.05	16 0.66
	18	23 45 34.1	15 37 44.48	44.40	— 0.08	109 26 40.04	43.00	+ 2.96	16 1.1
	19	23 4 48				109 40 34.71	35.00	+ 0.29	
	21	23 46 18.9	15 50 19.06	18.60	— 0.46	110 7 13.72	13.00	— 0.72	
	22	23 46 34.8	15 54 31.45	31.40	— 0.05	110 19 57.28	59.00	+ 1.72	16 2.3
	23	23 46 52				110 32 22.87	23.00	+ 0.13	
	24	23 47 10				110 44 21.50	23.00	+ 1.50	
	27	23 48 8				111 18 4.19	4.00	— 0.19	16 0.44
	28	23 48 29				111 28 28.37	31.00	+ 2.63	16 1.75
	30	23 49 12				111 48 5.66	8.00	+ 2.34	16 3.22
Dec									
	1	23 49 35				111 57 19.73	20.00	+ 0.27	16 0.77
	2	23 49 59.0	16 37 21.84	21.30	— 0.54	112 6 5.82	6.00	+ 0.18	16 2.31
	4	23 50 47				112 22 20.10	22.00	+ 1.90	15 57.60
	5	23 51 13.5	16 50 25.67	25.30	— 0.37	112 29 48.95	50.00	+ 1.05	15 59.68
	6	23 51 38.8	16 54 48.07	47.70	— 0.37	112 36 50.74	50.00	— 0.74	15 57.90
	7	23 52 4.8	16 59 10.94	10.70	— 0.24	112 43 24.22	29.00	+ 4.78	16 3.36
	8	23 52 31				112 49 33.58	37.00	+ 3.42	16 2.58
	9	23 52 59				112 55 16.74	19.00	+ 2.26	16 2.33
	10	23 53 26.8	17 12 22.42	22.20	— 0.22	113 0 31.83	34.00	+ 2.17	16 3.23
	11	23 53 55.0	17 16 47.39	46.90	— 0.49	113 5 17.56	21.00	+ 3.44	16 2.60
	13	23 54 52				113 13 29.82	33.00	+ 3.18	
	14	23 55 21				113 16 54.81	57.00	+ 2.19	16 0.15
	17	23 56 50				113 24 21.25	23.00	+ 1.75	
	18	23 57 19.1	17 47 48.04	47.50	0.54	113 25 54.08	53.00	— 1.08	
	19	23 57 49.6	17 52 14.70	14.10	— 0.60	113 26 57.18	56.00	— 1.18	16 0.15
	21	23 58 48				113 27 35.93	39.00	+ 3.07	16 0.00
	22	23 59 18.6	18 5 33.90	33.60	— 0.30	113 27 17.24	19.00	+ 1.76	16 2.32
	23	23 59 48				113 26 23.88	28.00	+ 4.12	16 1.84
	26	0 0 48.2	18 18 53.37	53.20	— 0.17	113 23 22.03	24.00	+ 1.97	16 1.75
	27	0 1 18.0	18 23 19.90	19.50	— 0.40	113 21 8.70	10.00	+ 1.30	16 3.6
	29	0 2 17.0	18 32 12.21	11.60	— 0.61	113 15 12.64	17.00	+ 4.36	16 3.14
	30	0 2 45.8	18 36 37.59	37.30	— 0.29	113 11 35.59	39.00	+ 3.41	16 1.08
	31	0 3 14.7	18 41 3.31	3.00	— 0.31	113 7 30.15	32.00	+ 1.85	16 0.46
1834									
J	2	0 4 11.3	18 49 52.97	53.37	+ 0.40	112 57 51.95	52.70	+ 0.75	16 4.10
	4	0 5 7.2	18 58 42.19	42.26	+ 0.07	112 46 26.82	26.70	— 0.12	
	5	0 5 34.8	19 3 6.28	6.14	— 0.14	112 40 1.80	3.10	+ 1.30	16 1.30
	6	0 6 1.5	19 7 29.71	29.60	— 0.11	112 33 14.52	12.30	— 2.22	16 3.28
	7	0 6 27.8	19 11 52.62	52.58	— 0.04	112 25 53.88	54.90	+ 1.02	16 4.90
	8	0 6 53.3	19 16 14.68	15.12	+ 0.44	112 18 11.17	10.90	— 0.27	16 5.08
	10	0 7 43.6	19 24 58.71	58.59	— 0.12	112 1 25.19	24.20	— 0.99	

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (Continued)

M	Solar Time	Right Ascension	North Polar Distance	Error	Right Ascension	North Polar Distance	Error	M
Observed		Observed	N.A.	f.N.A.	Observed	N.A.	f.N.A.	Hemisphere
1834								
Jan	11 0 8 83	19 29 19 75	19 51	- 0 24	111 52 20 03	22 00	+ 1 97	15 59 14
	12 0 8 31 4	19 33 39 53	39 81	+ 0 28	111 42 54 49	54 20	- 0 29	15 59 56
	14 0 9 17 6	19 42 18 81	18 52	- 0 29	111 22 44 19	43 20	- 0 99	16 3 22
	15 0 9 38 8	19 46 36 55	36 88	+ 0 33	111 11 58 97	0 50	+ 1 53	15 58 94
	16 0 10 0 4	19 50 54 92	54 55	- 0 37	111 0 54 28	53 50	- 0 78	15 59 80
	17 0 10 20 5	19 55 11 47	11 50	+ 0 03	110 49 19 85	22 40	+ 2 55	16 0 14
	18 0 10 40 0	19 59 27 58	27 73	+ 0 15	110 37 28 35	27 60	- 0 75	16 1 34
	19 0 10 58 8	20 3 43 11	43 21	+ 0 10	110 25 6 51	9 40	+ 2 89	16 3 54
	20 0 11 17 2	20 7 57 99	57 94	- 0 05	110 12 28 24	28 30	+ 0 06	16 1 00
	21 0 11 34 7	20 12 12 10	11 90	- 0 20	109 59 20 38	24 30	+ 3 92	16 2 70
	22 0 11 51 0	20 16 25 08	25 07	- 0 01	109 45 57 83	58 10	+ 0 27	
	23 0 12 6 5	20 20 37 24	37 45	+ 0 21	109 32 9 32	10 00	+ 0 68	16 3 98
	24 0 12 21 6	20 24 49 04	49 03	- 0 01	109 18 1 56	0 10	- 1 46	16 2 28
	25 0 12 35 8	20 28 59 79	59 83	+ 0 04	109 3 28 70	29 10	+ 0 40	16 4 93
	26 0 12 49 0	20 33 9 76	9 91	+ 0 15	108 48 38 24	38 20	- 0 04	15 59 50
	27 0 13 1 6	20 37 18 86	19 00	+ 0 14	108 33 25 41	25 00	- 0 41	16 1 90
	28 0 13 13 4	20 41 27 28	27 38	+ 0 10				16 2 50
	29 0 13 24 7	20 45 35 13	34 95	- 0 18	108 2 0 96	0 10	- 0 86	
	31 0 13 43 7	20 53 47 25	47 67	+ 0 42	107 29 20 35	17 70	- 2 65	
Feb	1 0 13 53				107 12 27 99	28 60	+ 0 61	16 1 27
	2 0 14 0 4	21 1 57 15	57 15	0 00	106 5 22 15	21 30	- 0 8 5	16 1 26
	3 0 14 7 0	21 6 0 65	0 69	+ 0 04	106 37 58 03	56 10	- 1 93	16 3 75
	4 0 14 13 3	21 10 3 18	3 40	+ 0 22	106 20 12 89	13 50	+ 0 61	16 2 12
	5 0 14 18 8	21 14 5 22	5 33	+ 0 11	106 2 12 64	13 90	+ 1 26	
	7 0 14 27 4	21 22 7 04	6 74	- 0 30	10 25 22 19	26 60	+ 4 41	
	8 0 14 30				10 6 40 04	37 60	- 2 44	16 1 77
	9 0 14 32 0	21 30 4 75	4 97	+ 0 22	104 47 33 42	34 40	+ 0 98	16 2 72
	11 0 14 34 4	21 38 0 16	59 99	- 0 17	104 8 45 66	43 70	- 1 96	16 2 88
	12 0 14 34				103 48 56 68	57 20	+ 0 52	16 1 86
	14 0 14 31				103 8 42 18	43 80	+ 1 62	
	15 0 14 28 6	21 53 40 58	40 67	+ 0 09	102 48 17 9 5	17 80	- 0 15	16 3 07
	16 0 14 2 7	21 57 34 11	33 92	- 0 19	102 27 37 88	39 50	+ 1 62	16 2 40
	17 0 14 21				10 6 49 41	49 50	+ 0 09	16 0 97
	18 0 14 16 5	22 5 18 00	18 24	+ 0 24	101 45 47 14	48 10	+ 0 96	16 1 62
	19 0 14 11 4	22 9 9 46	9 31	- 0 15	101 24 33 84	3 50	+ 1 66	16 2 75
	20 0 14 5 2	22 12 59 74	59 69	- 0 05	101 3 9 72	12 40	+ 2 68	16 2 77
	21 0 13 58 2	22 16 49 27	49 42	+ 0 15	100 41 42 13	39 10	- 3 03	16 0 86
	22 0 13 50				100 19 52 74	56 00	+ 3 26	16 2 65
	23 0 13 42 4	22 24 26 70	26 88	+ 0 18	99 58 3 57	3 50	- 0 07	16 2 37
	24 0 13 33 7	22 28 14 50	14 68	+ 0 18	99 36 1 21	1 90	+ 0 69	16 3 36
	25 0 13 24 8	22 32 2 18	1 86	- 0 32	99 13 50 73	51 80	+ 1 07	16 1 62
	26 0 13 14 4	22 35 48 15	48 47	+ 0 32	98 51 32 39	33 40	+ 1 01	16 1 62
	27 0 13 4 3	22 39 34 83	34 50	- 0 33	98 29 11 11	7 10	- 4 01	16 2 43
	28 0 12 53 0	22 43 20 02	20 00	- 0 02	98 6 32 29	33 30	+ 1 01	16 2 27
Mar	1 0 12 41 5	22 47 5 11	4 98	- 0 13	97 43 50 64	52 40	+ 1 76	16 2 77
	2 0 12 29				97 21 4 88	4 80	- 0 08	16 0 29
	3 0 12 17 0	22 54 33 54	33 46	- 0 08	96 58 10 04	10 90	+ 0 86	16 4 01
	4 0 12 3 8	22 7 16 90	17 00	+ 0 10	96 35 9 45	11 10	+ 1 65	16 2 82
	5 0 11 50 7	23 2 0 30	0 07	- 0 23	96 12 6 33	5 60	- 0 73	16 3 95
	7 0 11 22				95 25 38 30	39 40	+ 1 10	
	9 0 10 53				94 38 55 82	55 70	- 0 12	
	11 0 10 22				93 51 58 48	57 70	- 0 78	
	12 0 10 5				93 28 23 45	24 30	+ 0 85	
	13 0 9 49				93 4 47 91	48 40	+ 0 49	
	14 0 9 32				92 41 9 02	10 60	+ 1 58	
	15 0 9 15				92 17 29 79	31 00	+ 1 21	
	16 0 8 58				91 53 48 52	50 40	+ 1 88	

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER, (C i u d)

M	S	Time	f	A R from	A R from	Err	f N A	N P D f m	N P D fr	Err	f N A	M an
Ob	u			Ob	u			Ob	u			H S mld
1834												/
M	17	0	8 41					91 30 7 51	8 80	+ 1 29		
	18	0	8 22					91 6 22 31	26 80	+ 4 49		
	19	0	8 5					90 43 43 66	44 70	+ 1 04		
	20	0	7 47					90 19 2 20	3 00	+ 0 80		
	21	0	7 29					89 5 21 22	21 70	+ 0 48		
	24	0	6 34					88 44 20 75	25 20	+ 4 45		
	2	0	6 15					88 20 45 75	49 90	+ 4 15		
	26	0	5 56					87 57 14 44	17 10	+ 2 66		
	28	0	5 20					87 10 17 16	19 50	+ 2 34		
	29	0	5 1					86 46 54 62	55 40	+ 0 78		
	30	0	4 42					86 23 3 54	35 10	+ 2 56		
	31	0	4 24					86 0 16 19	18 70	+ 2 51		
Ap 1	1	0	4 5					85 37 3 78	6 70	+ 2 92		
	5	0	2 53					84 5 8 83	8 30	- 0 53		
	6	0	2 35					83 42 24 91	23 00	- 1 91		
	7	0	2 18					83 19 44 41	44 00	- 0 41		
	8	0	2 1					82 57 11 19	11 80	+ 0 61		
	9	0	1 44					82 34 45 35	46 30	+ 0 95		
	10	0	1 27					82 12 28 18	29 00	+ 0 82		
	12	0	0 55					81 28 22 24	17 70	- 4 54		
	14	0	0 23					80 44 39 21	40 50	+ 1 29		
	15	0	0 8					80 23 3 78	5 0	+ 1 92		
	15	23	59 53					80 1 39 84	40 50	+ 0 66		
	18	23	59 10					78 58 23 35	26 00	+ 2 65		
	19	23	58 57					78 37 47 44	42 60	- 4 84		
	20	23	58 44					78 17 8 55	10 40	+ 1 85		
	21	23	58 31					77 56 53 37	50 00	- 3 37		
	22	23	58 19					77 36 38 98	41 20	+ 2 22		
	23	23	58 7					77 16 42 40	44 60	+ 2 20		
	24	23	57 56					76 56 58 70	0 60	+ 1 90		
	25	23	57 45					76 37 26 63	29 30	+ 2 67		
	26	23	57 35					76 18 11 25	11 20	- 0 05		
	27	23	57 25					75 59 0 7	6 50	+ 5 93		
	28	23	57 15					75 40 11 21	15 0	+ 4 29		
	29	23	57 6					75 21 34 96	38 40	+ 3 44		
	30	23	56 58					7 3 18 01	1 80	- 2 21		
My	3	23	56 37					74 9 36 23	36 90	+ 0 67		
	4	23	6 31					73 52 15 16	14 70	- 0 46		
	5	23	56 26					73 35 8 83	8 40	- 0 43		
	7	23	56 17					73 1 44 79	44 90	+ 0 11		
	8	23	56 13					72 4 28 59	28 30	- 0 29		
	9	23	56 10					72 28 29 87	29 00	- 0 87		
	11	23	56 6					71 8 17 75	23 30	+ 5 55		
	12	23	56 5					71 43 14 41	17 40	+ 2 99		
	16	23	56 5					70 45 57 19	1 50	+ 4 31		
	18	23	56 8					70 18 16 13	19 80	+ 3 67		
	20	23	56 14					69 53 55 94	58 70	+ 2 76		
	22	23	56 21					69 30 0 81	59 70	- 1 11		
	23	23	56 26					69 18 31 27	31 80	+ 0 53		
	25	23	56 36					68 56 36 10	39 50	+ 3 40		
	26	23	56 42					68 46 14 90	15 80	+ 0 90		
J ne	1	23	57 29					67 51 39 01	40 40	+ 1 39		
	2	23	57 39					67 43 51 51	54 00	+ 2 49		
	3	23	57 48					67 36 29 47	30 90	+ 1 43		
	5	23	58 9					67 22 52 33	5 30	+ 2 97		
	8	23	58 42					67 5 26 03	30 10	+ 4 07		

Th Transit I trum nt was sent t Cal thia f repairs

RIGHT ASCEN ON AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (*Contd*)

M S l Tim f	A R fr m	A R f m	Err f N A	N P D f m	N P D fr m	Err f N A	M an
Obs rv tl	Ob tl	N A		Ob l	N A		II Semid
1834							
J 9 23 58 57				67 0 26 58	30 00	+ 3 42	
10 23 59 6				66 55 52 92	54 00	+ 1 08	
12 23 59 31				66 47 56 63	55 30	- 1 33	
16 0 0 8				66 39 0 02	1 60	+ 1 58	
17 0 0 21				66 36 51 07	53 10	+ 2 03	
18 0 0 34				66 35 6 20	9 30	+ 3 10	
22 0 1 25				66 32 19 9	22 70	+ 2 75	
23 0 1 38				66 32 4 25	42 30	- 2 75	
24 0 1 51				66 33 27 8	27 60	- 0 25	
25 0 2 3				66 34 36 29	37 20	+ 0 91	
26 0 2 16				66 36 12 30	11 80	- 0 50	
27 0 2 29				66 38 7 17	10 80	+ 3 63	
28 0 2 41				66 40 35 55	34 70	- 0 85	
29 0 2 53				66 43 25 80	22 90	- 2 90	
J ly 2 0 3 29				66 54 13 90	14 30	+ 0 40	
4 0 3 51				67 3 29 89	30 00	+ 0 11	
6 0 4 13				67 14 18 93	21 60	+ 2 67	
7 0 4 23				67 20 21 70	23 10	+ 1 40	
10 0 4 52				67 40 50 30	48 60	- 1 70	
12 0 5 8				67 56 21 16	21 30	+ 0 14	
13 0 5 16				68 4 43 97	42 10	- 1 87	
14 0 5 23				68 13 24 09	25 30	+ 1 21	
15 0 5 30				68 22 29 85	30 80	+ 0 9	
19 0 5 52				69 2 30 78	31 70	+ 0 92	
20 0 5 56				69 13 27 29	25 60	- 1 69	
Aug 2 0 5 57				72 5 23 00	26 00	+ 3 00	
4 0 5 49				72 36 32 22	32 90	+ 0 68	
5 0 5 43				72 52 2 85	32 00	- 0 85	
7 0 5 31				73 25 18 06	20 00	+ 1 94	
8 0 5 24				73 42 7 29	8 30	+ 1 01	
12 0 4 51				74 51 5 41	55 70	+ 0 29	
13 0 4 41				75 9 58 66	59 50	+ 0 84	
14 0 4 30				75 28 14 26	17 40	+ 3 14	
19 0 3 30				77 3 5 83	85 0	+ 2 67	
S pt 10 23 56 43				85 15 25 80	27 60	+ 1 80	
14 23 55 19				86 48 22 81	20 70	- 2 11	
16 23 54 36				87 34 40 00	39 50	- 0 50	
17 23 54 15				87 56 55 40	53 40	- 2 00	
19 23 3 33				88 43 27 44	28 10	+ 0 96	
21 23 52 51				89 30 7 7	11 40	+ 3 83	
22 23 52 30				89 53 37 22	34 80	- 2 42	
23 23 52 9				90 17 0 81	59 30	- 1 51	
24 23 51 49				90 39 23 49	24 50	+ 1 01	
25 23 51 28				91 2 49 69	50 00	+ 0 31	
28 23 50 28				92 14 5 29	4 80	- 0 49	
Oct 4 23 48 36				94 33 57 12	5 00	- 2 12	
6 23 48 1				95 20 10 99	8 90	- 2 09	
7 23 47 44				95 43 10 13	9 80	- 0 33	
8 23 47 28				96 6 1 04	6 30	+ 5 26	
15 23 45 45				98 44 4 92	3 00	- 1 92	
16 23 45 32				99 6 9 13	10 00	+ 0 87	
17 23 45 21				99 28 8 79	8 90	+ 0 11	
19 23 44 58				100 11 42 33	41 70	- 0 63	
21 23 44 39				100 54 39 52	38 80	- 0 72	
23 23 44 22				101 36 53 97	57 10	+ 3 13	

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (*C h used*)

M	S	lar	Tim	f	A R from Ob rv tlo	A R from N A.	Err	f N A	N P D from Ob rv tlo	N P D f m N A.	Err	f N A	M an Semidl m te	
													H ri t l	V rti al
1834			m						/ /	/			/ "	/ /
Oct	24	23	44	15					101 57 47 90	50 70	+ 2 80			
	25	23	44	8					102 18 31 50	33 50	+ 2 00			
	26	23	44	2					102 39 4 34	5 00	+ 0 66			
	27	23	43	57					102 51 31 19	24 80	- 6 39			
	28	23	43	52					103 19 30 41	32 60	+ 2 19			
	30	23	43	47					103 59 12 00	10 10	- 1 90			
Dec	15	23	55	42					113 19 13 63	12 60	- 1 03			
	16	23	56	11					113 21 46 04	47 50	+ 1 46			
	17	23	56	40					113 23 57 29	54 40	- 2 89			
	18	23	57	10					113 25 32 58	33 10	+ 0 52			
	19	23	57	40					113 26 45 42	43 50	- 1 92			
	22	23	59	10					113 27 26 93	25 60	- 1 33			
	23	23	59	39					113 26 42 88	42 90	+ 0 02			
	25	0	0	10					113 25 31 81	32 10	+ 0 29			
	26	0	0	40					113 23 5 26	52 90	- 2 36			
	27	0	1	9					113 21 47 59	45 50	- 2 09			
	28	0	1	39					113 19 8 62	10 00	+ 1 38			
	31	0	3	7					113 8 34 14	34 70	+ 0 56			
1835 Jan	3	0	4	33					112 53 49 90	49 40	- 0 50			
	5	0	5	28					112 41 39 80	4 00	+ 2 20			
	6	0	5	55					112 34 58 60	57 70	- 0 90			
	7	0	6	21					112 27 45 66	46 50	+ 0 84			
	9	0	7	13					112 12 6 03	4 70	- 1 33			
	15	0	9	33					111 14 44 71	42 20	- 2 51			16 1 79
	16	0	9	54					111 3 42 97	41 40	- 1 57			16 0 13
	17	0	10	14					110 52 14 33	16 60	+ 2 27			16 3 12
	18	0	10	34					110 40 27 21	27 70	+ 0 49			16 1 11
	19	0	10	52					110 28 19 64	15 40	- 4 24			16 1 62
	20	0	11	11					110 15 39 48	39 80	+ 0 32			16 1 31
	21	0	11	29					110 2 40 14	41 40	+ 1 26			16 2 24
	22	0	11	46					109 49 21 40	20 60	- 0 80			16 1 26
	24	0	12	17					109 21 3 90	32 80	- 3 10			
	26	0	12	45					108 52 19 28	19 50	+ 0 22			16 2 31
	30	0	13	32					107 48 48 13	48 20	+ 0 07			16 3 27
	31	0	13	42					107 33 23 67	21 50	- 2 17			
Feb	1	0	13	51					107 16 39 11	36 30	- 2 81			16 2 17
	2	0	13	58 8	21 0 58 54	58 53	- 0 01		106 59 31 00	32 70	+ 1 70			16 3 05
	3	0	14	6 3	21 5 1 58	1 28	- 0 30		106 42 6 89	11 50	+ 4 61			16 0 40
	4	0	14	12					106 24 31 66	32 80	+ 1 14			16 3 04
	5	0	14	18 1	21 13 7 46	7 27	- 0 19		106 6 32 01	37 30	+ 5 29	16 2 33		
	6	0	14	22 5	21 17 8 42	8 51	+ 0 09		105 48 24 55	25 30	+ 0 75	16 4 09	15 57 87	
	7	0	14	26					105 29 53 37	56 90	+ 3 53			
	8	0	14	29 8	21 25 8 84	8 53	- 0 31		105 11 8 53	12 80	+ 4 27			
	10	0	14	33					104 32 55 33	59 60	+ 4 27	16 2 37	15 59 31	
	11	0	14	34					104 13 31 28	30 90	- 0 38			
	12	0	14	34 1	21 40 59 24	58 82	- 0 42		103 53 46 25	48 30	+ 2 05	16 0 28	16 3 34	
	13	0	14	32 8	21 44 54 50	54 44	- 0 06		103 33 51 65	51 80	+ 0 15	16 1 40	16 1 15	
	14	0	14	31 4	21 48 49 56	49 27	- 0 29		103 13 40 44	42 40	+ 1 96	16 3 01	16 3 54	
	15	0	14	29 2	21 52 43 92	43 36	- 0 56		102 53 22 03	20 10	- 1 93	16 1 93		
	16	0	14	25 9	21 56 37 22	36 75	- 0 47		102 32 41 95	45 40	+ 3 45	16 1 71	16 2 49	
	17	0	14	21 9	22 0 29 86	29 41	- 0 45		102 11 54 50	58 60	+ 4 10	16 1 59		
	18	0	14	17 4	22 4 21 65	21 37	- 0 28		101 50 59 33	0 10	+ 0 77	16 1 31		
	19	0	14	12 0	22 8 13 07	12 66	- 0 41		101 29 49 69	50 30	+ 0 61	16 2 10	16 1 26	
	20	0	14	5 8	22 12 3 51	3 28	- 0 23		101 8 27 80	29 50	+ 1 70	16 1 71		
	21	0	13	59 5	22 15 53 67	53 24	- 0 43		100 46 56 72	58 20	+ 1 48	15 59 52		
	22	0	13	52 3	22 19 42 79	42 58	- 0 21		100 25 14 43	16 90	+ 2 47	15 59 71	16 0 79	

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (Continued)

M	S	Time	f	A R f m	A R f m	E	f N A	N P D f m	N P D	f m	E	f N A	Mean Semidiam t	
													H i tal	V r t i a l
Ob rv				Ob rv l	N A			Ob rv ti	N A					
183														
Feb	23	0	13	44.4	22 23 31.71	31.29	-0.42	100 3 23.83	26.00	+2.17			16 1.93	16 1.56
	24	0	13	35.8	22 27 19.82	19.38	-0.44	99 41 25.77	25.90	+0.13			16 2.49	16 1.55
	25	0	13	27.5	22 31 7.90	6.88	-1.02	99 19 16.30	17.00	+0.65			16 0.32	
	26	0	13	18.0	22 34 54.91	53.78	-1.13	98 56 57.71	59.90	+2.19			16 2.29	16 1.99
	27	0	13	7.4	22 38 40.80	40.10	-0.70	98 31 30.48	34.70	+4.22			16 1.89	
	28	0	12	56.7	22 42 26.45	25.86	-0.59	98 11 58.99	1.90	+2.91			16 0.70	16 1.83
M 1	1	0	12	45.2	22 46 11.00	11.10	-0.4						16 1.53	
	2	0	1	33.4	22 49 56.41	55.80	-0.61	97 26 34.61	34.60	-0.01			16 2.04	15 59.29
	3	0	12	20.7	22 53 40.18	39.98	-0.20	97 3 40.31	41.00	+1.19			16 2.35	16 2.96
	4	0	12	8.6	22 57 24.58	23.66	-0.92	96 40 40.64	42.60	+1.96			16 1.53	15 59.38
		0	11	55.1	23 1 7.71	6.87	-0.84	96 17 3.60	38.00	+2.40			16 0.95	16 1.97
	6	0	11	41.4	23 4 50.37	49.61	-0.76	9 4 27.83	28.0	+0.37			16 1.50	16 1.65
		0	11	27.1	23 8 32.72	31.91	-0.81	95 31 11.94	13.80	+1.86			15 59.38	16 3.4
	8	0	11	12.3	23 12 14.28	13.78	-0.50	95 7 53.45	55.10	+1.65			16 0.41	16 0.96
	9	0	10	57.3	23 15 55.77	55.25	-0.02	94 44 32.87	32.70	-0.17			16 1.72	
	10	0	10	42.0	23 19 37.06	36.35	-0.71	94 21 7.26	6.50	-0.76			16 2.94	
	11	0	10	26.2	23 23 17.72	17.07	-0.6							
	12	0	10	10.2	23 26 38.33	7.45	-0.88	93 34 3.95	5.10	+1.15			16 1.55	16 3.26
	13	0	9	53.4	23 30 37.94	37.52	-0.42	93 10 30.28	30.70	+0.42			16 3.54	16 0.34
	14	0	9	36.7	23 34 17.84	17.27	-0.57	92 46 58.22	54.20	+0.98			16 1.02	16 3.58
	15	0	9	19.6	23 37 57.21	56.78	-0.43	92 23 15.09	15.80	-0.19			16 1.88	16 1.17
	16	0	9	2.8	23 41 36.88	36.04	-0.84	91 59 33.83	30.10	+2.27			16 1.67	16 1.67
	17	0	8	45.1	23 45 16.07	1.06	-1.01	91 30 55.48	50.30	-0.18			16 2.14	16 2.40
	18	0	8	27.3	23 48 54.44	53.89	-0.05	91 12 10.11	13.80	+3.69			16 2.87	16 2.24
	19	0	8	10.0	23 52 33.73	32.56	-1.17	90 48 31.35	31.90	+0.55			16 0.58	15 59.82
	20	0	7	51.9	23 56 12.11	11.06	-1.05	90 24 48.05	50.10	+2.05			16 0.85	16 3.77
	21	0	7	33.7	23 59 50.40	49.45	-0.9	90 1 8.09	8.70	+0.11			16 1.68	16 2.16
	22	0	7	15.6	0 3 28.67	27.73	-0.94						16 0.74	
	23	0	6	57.1	0 7 6.72	5.91	-0.81	89 13 47.40	48.00	+0.60			16 2.12	16 1.46
	24	0	6	38.5	0 10 44.71	44.04	-0.67	88 50 9.29	9.00	+0.21			16 3.78	15 58.53
	25	0	6	20.2	0 14 22.94	22.11	-0.83	88 26 30.45	33.00	+2.50			16 2.00	16 3.78
	26	0	6	1.5	0 18 0.64	0.13	-0.51	88 2 57.30	58.60	+1.30			16 1.92	15 59.86
	27	0	5	42.8	0 21 38.36	38.15	-0.21	87 39 23.60	26.60	+3.00			16 0.60	
	28	0	5	24.4	0 25 16.68	16.16	-0.52	87 15 54.54	57.50	+2.96			16 0.44	16 2.80
	29	0	5	6.0	0 28 54.59	54.20	-0.39	86 52 30.97	31.0	+0.73			16 3.23	16 1.63
	30	0	4	48.1	0 32 33.17	32.25	-0.92	86 29 6.86	9.30	+2.44			16 0.73	16 2.05
	31	0	4	29.0	0 36 10.65	10.39	-0.26	86 5 50.71	0.80	+0.09			16 1.63	16 0.05
Ap 1	4	0	3	16				84 33 22.49	24.60	+2.11			16 2.73	16 1.69
	5	0	2	58				81 10 29.66	31.50	+1.84			16 0.25	
	6	0	2	40.7	0 58 1.44	1.22	-0.22	83 47 47.06	44.70	-2.86			16 1.33	
	7	0	2	23.6	1 1 40.78	40.19	-0.59	83 20 9.44	4.50	-4.94			16 1.49	
	8	0	2	6				83 2 31.31	31.20	-0.11			15 59.97	16 0.91
	9	0	1	49				82 40 2.47	5.10	+2.03			16 2.44	16 2.13
	10	0	1	32				82 17 45.04	46.30	+1.26			16 4.11	16 0.16
	11	0	1	15				81 55 35.62	35.50	-0.12			16 0.99	16 2.80
	12	0	0	59.0	1 19 58.74	58.31	-0.43	81 33 32.10	32.80	+0.70			16 2.45	
	13	0	0	43.1	1 23 39.30	38.73	-0.57	81 11 37.34	38.50	+1.16			16 0.83	
	14	0	0	27.5	1 27 20.14	19.46	-0.68	80 49 52.85	53.30	+0.45			16 0.14	
	1	0	0	11.6	1 31 0.74	0.52	-0.22	80 28 19.00	16.80	-2.20			16 3.12	15 57.51
	1	23	59	56.7	1 34 42.48	41.95	-0.53	80 6 49.41	49.80	+0.39			16 1.17	16 3.27
	16	23	59	42				79 45 32.36	32.50	+0.14			16 0.24	16 1.45
	17	23	59	27.2	1 42 5.88	5.94	+0.06	79 24 27.58	25.20	-2.38			16 0.91	16 2.47
	18	23	59	13.6	1 45 48.77	48.51	-0.26	79 3 28.04	28.30	+0.26			15 59.62	16 0.27
	19	23	59	0.0	1 49 31.65	31.52	-0.13	78 42 41.42	42.10	+0.68			15 59.19	16 3.28
	20	23	58	47				78 22 7.14	6.80	-0.34			16 2.87	16 0.63
	21	23	58	34				78 2 42.89	42.60	-0.29			16 1.05	16 1.06
	22	23	58	22				77 41 31.55	30.30	-1.25				

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (Continued)

M	Sol	Time	f	A R f	A R f m	Err	f N A	N P D f m	N P D	Err	f N A	M S midl m	
												II l f l	V t i a l
Ob	rv	tl		Ob	l		N A	Ob	rv	tl			
1835													
m													
April													
23	23	58	11					77	21	31	15	29 90	16 172
24	23	57	59 5	2	8	13	77	77	1	41	23	41 80	16 190
25	23	57	48 9	2	11	59	65	76	42	43	4	6 50	16 092
26	23	57	38 7	2	15	45	96	76	22	45	15	44 20	16 178
27	23	57	28 6	2	19	32	50	76	3	36	65	35 30	16 02
28	23	57	19 9	2	23	20	33	75	44	37	80	40 30	16 169
29	23	57	10 9	2	27	7	80	75	26	59	15	58 90	16 468
30	23	57	2					75	7	29	83	31 30	16 027
M y													
1	23	56	55 1	2	34	45	16	74	49	18	48	20 20	16 380
2	23	56	47 7	2	38	34	30	74	31	21	45	23 20	16 181
3	23	56	41 1	2	42	24	32						1 59 00
4	23	56	34 7	2	46	14	39	73	56	15	13	15 70	16 216
5	23	56	29 0	2	50	5	21	73	39	4	54	5 90	16 129
6	23	56	24 2	2	53	56	93	73	22	16	50	12 20	16 169
7	23	56	19 8	2	57	49	11	73	5	35	28	35 50	16 152
8	23	56	16 3	3	1	42	07	72	19	14	84	15 70	16 322
10	23	56	9 8	3	9	28	76	72	17	27	73	27 80	16 129
11	23	56	7 1	3	13	22	39	72	1	57	91	0 20	16 468
13	23	56	5 1	3	21	13	69	71	32	0	71	59 80	16 027
14	23	56	4 3	3	25	9	36	71	17	28	12	27 00	16 198
15	23	56	4 1	3	29	5	93	71	3	13	91	13 30	16 020
16	23	56	5 1	3	33	3	47	70	49	9	70	18 40	15 59 96
17	23	56	6 5	3	37	1	33	70	35	39	17	43 00	16 213
18	23	56	8 1	3	40	59	46	70	22	26	45	27 30	16 272
19	23	56	10 6	3	44	58	63	70	9	32	20	31 30	16 122
20	23	56	14 1	3	48	58	47	69	56	56	76	55 60	16 237
21	23	56	17										16 31
22	23	56	21 1	3	56	58	72	69	32	46	90	45 50	16 202
23	23	56	25 7	4	0	59	93	69	21	15	87	11 80	16 162
24	23	56	31 4	4	5	2	19	69	9	15	0	59 30	16 238
25	23	56	37 0	4	9	4	30	68	9	0	93	8 20	16 358
26	23	56	43 2	4	13	7	12	68	48	37	05	38 70	16 481
27	23	56	49 6	4	17	10	09	68	38	29	77	31 20	16 308
28	23	56	56					68	28	43	67	4 70	16 206
29	23	57	4					68	19	24	01	23 50	16 063
30	23	57	12					68	10	22	03	21 80	16 002
31	23	57	21					68	1	41	04	44 00	16 170
June													
1	23	57	29					67	53	30	40	29 10	16 088
2	23	57	39					67	45	35	43	37 30	16 198
3	23	57	48					67	38	8	83	8 90	16 002
4	23	57	58 5	4	49	51	66	67	31	4	00	4 20	16 272
6	23	58	19					67	18	5	49	5 50	
7	23	58	30 6	5	2	12	62	67	12	13	60	11 80	
9	23	58	52 8	5	10	29	01	67	1	37	45	36 60	
12	23	59	28					66	48	45	49	45 60	16 089
13	23	59	40					66	45	18	39	17 20	16 081
18	0	0	31 1	5	43	39	64						
19	0	0	44 2	5	47	49	65	66	34	4	21	4 90	16 325
20	0	0	57 4	5	51	59	35	66	33	2	53	4 50	16 417
21	0	1	10 2	5	56	8	67	66	32	29	87	29 10	16 263
23	0	1	36 5	6	4	28	34	66	32	32	50	32 60	
25	0	2	2					66	34	11	88	15 20	16 162
26	0	2	15					66	35	44	18	44 70	16 155
29	0	2	52 9	6	29	24	45	66	43	35	40	37 40	16 119
30	0	3	4 9	6	33	32	98	66	45	44	73	44 60	16 198
J ly													
1	0	3	17 1	6	37	41	66	66	49	16	95	16 20	16 189

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (*Continued*)

M	S	T	m	f	A R f m	A R f m	E	f N A	N P D f m	N P D	f m	E	f N A	M S midiam	
					Ob rv tl	N			Ob rv tl	N A	N A			H l t l	V l al
183				m											
J ly	2	0	3	28					66 53 14 45	12 00	— 2 45			16 1 77	16 3 26
	3	0	3	40 1	6 45 57 88	57 68	— 0 20		66 57 32 93	32 10	— 0 83			16 5 12	16 1 82
	4	0	3	51 2	6 50 5 52	5 39	— 0 13		67 2 16 71	16 40	— 0 81				
	6	0	4	12										15 59 92	
	7	0	4	22					67 18 56 01	53 20	— 2 81			16 1 01	
	8	0	4	32					67 25 14 23	12 90	— 1 33			16 4 47	16 1 08
	9	0	4	42 1	7 10 39 37	38 90	— 0 47		67 31 55 94	55 80	— 0 14			16 1 91	16 3 10
	11	0	4	59					67 46 33 65	31 40	— 2 25				16 1 14
	12	0	5	7 9	7 22 54 87	54 32	— 0 55		67 54 25 09	23 40	— 1 69			15 59 59	
	13	0	5	15 1	7 26 58 6	58 61	— 0 04		68 2 38 20	38 50	+ 0 30			16 0 77	16 1 99
	15	0	5	29										16 2 08	
	16	0	5	3					68 29 40 34	38 10	— 2 24			16 1 48	
	17	0	5	41 3	7 43 11 18	11 07	— 0 11		68 39 23 23	22 30	— 0 93			16 1 02	16 3 89
	20	0	5	5 8	7 55 15 40	15 29	— 0 11		69 10 43 83	44 80	+ 0 97			15 59 78	
	21	0	5	59					69 21 56 91	54 90	— 2 01			16 1 75	16 0 10
	23	0	6	5 7	8 7 15 47	14 74	— 0 73		69 45 19 52	17 30	— 2 22			16 0 52	
	24	0	6	7 4	8 11 13 67	13 43	— 0 24							16 0 46	
	25	0	6	8 3	8 15 11 72	11 54	— 0 18		70 10 3 21	1 20	— 2 01				16 3 16
	26	0	6	9 6	8 19 9 24	9 10	— 0 14		70 22 51 97	53 20	+ 1 23				16 1 93
	27	0	6	9 8	8 23 6 16	6 03	— 0 13		70 36 6 18	4 70	— 1 48			16 1 01	16 3 35
	28	0	6	10 7	8 27 2 44	2 36	— 0 08		70 49 35 36	35 60	+ 0 24			15 59 92	16 2 70
	29	0	6	10					71 3 27 14	25 40	— 1 74			16 0 08	16 0 29
	30	0	6	8					71 17 34 80	34 10	— 0 70			16 1 09	16 1 07
	31	0	6	6					71 32 4 30	1 10	— 3 20			16 0 42	16 0 88
Aug	1	0	6	4					71 46 47 13	46 10	— 1 03			15 59 74	16 1 57
	2	0	6	0 1	8 46 3 13	34 75	— 0 38		72 1 49 52	49 30	— 0 22			16 1 45	
	3	0	5	6					72 17 11 54	10 00	— 1 54			16 2 55	
	4	0	5	51					72 32 49 38	47 90	— 1 48			15 59 84	16 1 29
	5	0	5	46 4	8 58 10 94	10 73	— 0 21		72 48 43 28	42 60	— 0 68			16 3 73	
	6	0	5	40 9	9 2 1 86	1 48	— 0 38		73 4 58 56	34 10	— 4 46			16 3 30	16 1 48
	7	0	5	34 7	9 5 52 28	51 65	— 0 63		73 21 23 47	21 90	— 1 57			16 4 03	16 3 26
	8	0	5	27										16 3 08	
	9	0	5	20 2	9 13 30 85	30 19	— 0 66		73 55 4 40	5 40	+ 1 00			16 1 02	
	13	0	4	43					75 5 36 98	36 00	— 0 98			16 3 92	16 1 84
	14	0	4	33					75 23 48 47	50 20	+ 1 73			16 1 72	16 1 84
	20	0	3	20					77 18 0 10	0 00	— 0 10			16 1 60	16 1 21
	26	0	1	50					79 19 26 51	27 80	+ 1 29				
	27	0	1	31 0	10 20 42 02	41 77	— 0 25		79 40 21 05	22 20	+ 1 15			16 1 35	16 2 43
	28	0	1	16 4	10 24 21 88	21 37	— 0 51		80 1 24 25	21 80	— 2 45			16 0 98	
	29	0	0	59					80 22 34 67	33 40	— 1 27			15 59 98	16 2 71
	30	0	0	42					80 43 53 57	54 10	+ 0 53			16 1 78	
	31	0	0	24 7	10 35 18 77	17 97	— 0 80		81 5 23 57	23 60	+ 0 03			16 0 42	
Sept	1	0	0	5 6	10 38 56 05	56 11	+ 0 06		81 27 1 55	1 50	— 0 05			16 1 19	16 0 48
	1	23	59	47					81 48 46 13	47 50	+ 1 37			16 0 20	16 1 75
	2	23	59	28					82 10 40 04	41 40	+ 1 36			16 3 21	16 2 25
	3	23	59	8 6	10 49 48 63	48 61	— 0 02								
	4	23	58	49					82 54 55 74	51 30	— 4 44				
	5	23	58	29					83 17 7 72	6 60	— 1 12			16 3 95	
	6	23	58	9					83 32 30 61	28 50	— 2 11			16 1 72	
	7	23	57	49 4	11 4 15 29	15 17	— 0 12		84 2 55 21	56 80	+ 1 59			16 2 18	
	8	23	57	29 5	11 7 52 04	51 27	— 0 77		84 24 30 19	30 90	+ 0 71			16 0 67	16 1 11
	12	23	56	6 5	11 22 14 96	14 30	— 0 66								
	14	23	55	24 2	11 29 25 66	25 29	— 0 37							16 0 03	
	15	23	55	3 3	11 33 1 33	0 74	— 0 59		87 4 50 99	51 40	+ 0 41			15 59 52	
	16	23	54	42 3	11 36 36 82	36 18	— 0 64		87 28 2 90	2 40	— 0 50			16 0 32	
	17	23	54	21 0	11 40 12 01	11 60	— 0 41		87 51 17 48	16 20	— 1 28			16 0 63	
	19	23	53	38 7	11 47 22 73	22 53	— 0 20		88 37 49 84	51 70	+ 1 86			16 0 50	15 59 61

RIGHT ASCENSION AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (*Continued*)

M an Solar Tim f				A R fr m		A R fr m		Er	f N A	N P D f m		N P D		f	f N A	M S mid m												
Ob		ti		Ob rv ti		N A				Ob rv ti		f m				N A		ti		v								
1835				m		m				m		m																
Sept	21	23	52	56	8	11	54	33	70	—0	09	89	24	34	67	35	70	+1	03	16	0	90	16	1	66			
	23	23	52	15	4	12	1	45	40	45	21	90	11	26	81	25	00	—1	81	16	2	29						
	24	23	51	55	1	12	5	21	57	21	15	90	34	50	34	50	50	+0	16	16	2	53						
	25	23	51	34	2	12	8	57	22	57	25	90	58	16	12	16	70	+0	58	16	2	31						
	26	23	51	14	4	12	12	33	93	33	50	91	21	42	25	42	70	+0	45	16	1	30						
	27	23	50	54	0	12	16	9	91	9	90	91	45	5	33	7	90	+2	57	16	3	39						
	29	23	50	14	4	12	23	23	50	23	40	—0	10	92	31	56	45	55	50	—0	95	16				1	58	
Oct	2	23	49	17	4	12	34	15	84	15	48	—0	36	93	41	54	62	54	80	+0	18							
	7	23	47	48	0	12	52	28	83	28	65	—0	18	95	37	36	57	35	70	—0	87	16	0	95				
	8	23	47	31	4	12	56	8	68	8	47	—0	21	96	0	31	0	32	30	+0	80							
	9	23	47	15	0	12	59	48	86	48	70	—0	16	96	23	21	77	24	00	+2	23	16	2	18				
	10	23	46	59	1	13	3	29	19	29	43	—0	06	96	46	10	57	11	10	—0	53	16	3	55				
	11	23	46	44	0	13	7	10	87	10	64	—0	23	97	8	49	74	52	80	+3	06							
	12	23	46	29	0	13	10	52	55	52	38	—0	17	97	31	28	01	28	70	+0	69	16	1	44				
	13	23	46	14	6	13	14	34	54	34	63	+0	09	97	53	55	73	8	40	+2	67	16	1	96	16	1	39	
	14	23	46	1	3	13	18	17	78	17	42	—0	36	98	16	22	14	21	70	—0	44	16	1	49				
	15	23	45	47	8	13	22	0	83	0	79	—0	04	98	38	35	70	38	40	+2	70	16	3	2	16	1	40	
	16	23	45	35	3	13	25	44	81	44	72	—0	09	99	0	45	82	47	80	+1	98	16	5	7				
	17	23	45	23	3	13	29	29	40	29	25	—0	15	99	22	48	27	49	40	+1	13							
	18	23	45	12	0	13	33	14	64	14	41	—0	23	99	44	41	48	43	00	+1	52	16	3	39	16	1	2	
	19	23	45	1	3	13	37	0	36	0	19	—0	17	100	6	23	55	28	10	+4	55	16	3	08				
	22	23	44	32	7	13	48	21	51	21	41	—0	10	101	10	45	96	49	10	+3	14							
	23	23	44	24	8	13	52	10	03	9	84	—0	19	101	31	54	55	56	30	+1	75	16	2	12				
	25	23	44	10	5	13	59	49	00	48	77	—0	23	102	13	36	07	38	90	+2	83	16	3	01				
	26	23	44	4	6	14	3	39	63	39	31	—0	32	102	34	12	64	13	50	+0	86	16	2	06				
Nov	1	23	43	44										104	33	19	96	18	70	—1	26							
	4	23	43	44										105	29	42	14	44	0	+2	36	16	1	09	16	0	94	
	5	23	43	46	4	14	42	46	37	46	27	—0	10	105	48	2	03	3	20	+1	17	16	1	01				
	6	23	43	48	2	14	46	45	58	45	37	—0	21	106	6	5	95	5	90	—0	05	16	0	74				
	7	23	43	52	0	14	50	45	81	45	33	—0	48	106	23	50	41	52	70	+2	29	16	1	06				
	8	23	43	56	1	14	54	46	40	46	14	—0	26	106	41	20	73	22	80	+2	07	16	1	59				
	9	23	44	1	3	14	58	48	01	47	80	—0	21	106	58	36	52	36	10	—0	42							
	10	23	44	7	8	15	2	50	91	50	34	—0	57															
	11	23	44	14	5	15	6	54	24	53	75	—0	49	107	32	7	27	10	70	+3	43							
	12	23	44	22										107	48	34	09	31	10	—2	99							
	15	23	44	50										108	35	42	04	39	10	—2	94							
	17	23	45	13	2	15	31	32	47	32	31	—0	16	109	5	29	94	6	90	—3	04							
	18	23	45	2	8	15	35	41	78	41	75	—0	03	109	19	51	11	50	20	—0	91	16	0	87				
	20	23	45	54	1	15	44	3	30	3	11	—0	19															
	21	23	46	9	4	15	48	15	25	15	01	—0	24	110	0	54	08	53	50	—0	58	16	0	43				
	22	23	46	25	4	15	52	27	84	27	70	—0	14	110	13	50	49	51	00	+0	51	16	3	77	16	1	73	
	23	23	46	42	0	15	56	41	19	41	17	—0	02	110	26	24	60	26	00	+1	40							
	24	23	46	59	9	16	0	55	32	55	40	+0	08	110	38	37	67	38	40	+0	73							
25	23	47	17	9	16	5	10	21	10	39	+0	18	110	50	23	54	27	70	+4	16	16	2	17					
26	23	47	37	4	16	9	26	17	26	09	—0	08	111	1	53	04	53	40	+0	36	16	1	05	16	3	01		
27	23	47	56	6	16	13	42	23	42	53	+0	30	111	12	56	40	55	30	—1	10	16	2	31	16	1	97		
30	23	49	1										111	43	33	09	35	00	+1	91								
Dec	1	23	49	23	1	16	30	55	13	55	02	—0	11	111	52	58	72	58	60	—0	12	16	1	45				
	2	23	49	46	6	16	35	15	07	14	76	—0	31	112	1	56	34	56	90	+0	56	16	2	21	16	8	6	
	3	23	50	9	9	16	39	35	24	35	11	—0	13	112	10	31	98	29	60	—2	38	16	3	15				
	7	23	51	51										112	40	18	65	21	10	+2	45	16	1	80				
	8	23	52	17	2	17	1	25	53	25	19	—0	34	112	46	45	07	43	00	—2	07	16	1	62				
	9	23	52	44	1	17	5	48	91	48	73	—0	18	112	52	40	31	37	50	—2	81	16	2	51				
	10	23	53	11	5	17	10	12	98	12	72	—0	26	112	58	5	18	5	70	+0	52	16	0	41				
	12	23	54	7	1	17	19	1	68	1	88	+0	20	113	7	38	45	39	50	+1	05	16	2	75				
	14	23	55	4	7	17	27	52	58	52	48	—0	10	113	15	22	59	23	10	+0	51	16	0	53				

RIGHT ASCENSIONS AND NORTH POLAR DISTANCE OF THE SUN'S CENTER (C° time d)

M an S lar Tim e	Ob	A R f r m	Ob t l	A R f r m	N A	Err f N A	N P D f m	Ob s e r v t n	N I D	f m	N A	Err f N A	M midiam	
													H i t a l	V i
1836														
De	15 23 55 33.9	17 32 18 50	18 23	—0.27	113 18 35 25	33 20	—20	16 002						
	17 23 56 32.5	17 42 10 28	10 47	+0.19	113 23 28 61	29 40	+0.79	16 428						
	18 23 57 2.8	17 45 37 16	36 89	—0.27	113 25 15 68	15 20	—0.48	16 282					16 052	
	19 23 57 32.6	17 50 3 58	3 44	—0.14	113 26 32 60	32 50	—0.10	16 260						
	20 23 58 3.2	17 54 30 76	30 12	—0.64	113 27 22 86	21 90	—0.96	16 039						
	21 23 58 32.8	17 58 57 11	56 84	—0.27	113 27 43 06	42 90	—0.16	16 098						
	22 23 59 2.8	18 3 23 72	23 60	—0.12	113 27 35 45	35 60	+0.15	16 311						
	23 23 59 32.9	18 7 50 50	50 32	—0.18	113 27 10 1	59 90	—1.11	16 059						
	25 0 0 3.2	18 12 17 36	17 01	—0.35	113 25 55 81	5 70	—0.11	16 067						
	26 0 0 33.0	18 16 43 97	43 59	—0.38	113 24 21 42	23 20	+1.78	16 046						
	27 0 1 2				113 22 21 57	23 40	+1.83							
	29 0 2 2.4	18 30 3 20	2 52	—0.68	113 16 54 39	56 30	+1.81	16 262						
	30 0 2 31.2	18 34 28 66	28 43	—0.23	113 13 35 93	31 20	—4.73	16 124						
	31 0 3 0				113 9 37 12	38 20	+1.08							
1836														
J	2 0 3 57.5	18 47 45 02	44 57	—0.45	113 0 27 49	28 60	+1.11							
	3 0 4 25.7	18 52 9 79	9 28	—0.51	112 55 10 80	12 50	+1.70	16 201						
	4 0 4 53.5	18 56 34 21	33 65	—0.56	112 49 30 90	29 00	—1.90	16 027						
	6 0 5 47.6	19 5 21 47	21 15	—0.32	112 36 37 97	41 00	+3.03	16 196						
	7 0 6 14.2	19 9 44 65	44 25	—0.40	112 29 35 97	36 70	+0.73	16 187						
	8 0 6 39.8	19 14 7 04	6 89	—0.15	112 22 5 78	5 70	—0.08	16 372						
	9 0 7 5.1	19 18 28 92	29 04	+0.12	112 14 7 56	8 50	+0.94	16 368						
	10 0 7 30.4	19 22 50 95	50 69	—0.26	112 5 46 28	44 90	—1.38	16 268						
	11 0 7 55.1	19 27 12 31	11 80	—0.51	111 56 54 15	55 40	+1.25	15 5990						
	13 0 8 42.5	19 35 52 80	52 28	—0.52	111 37 58 78	59 60	+0.82	15 5980						
	14 0 9 4.8	19 40 11 93	11 63	—0.30	111 27 50 91	53 70	+2.79	15 5596						
	15 0 9 27				111 17 22 99	23 00	+0.01	16 358						
	16 0 9 48.5	19 48 48 91	48 44	—0.47	111 6 26 34	27 80	+1.46	16 232						
	17 0 10 9.2	19 53 6 12	5 83	—0.29	110 55 8 31	8 20	—0.11	15 5966						
	18 0 10 29.2	19 57 22 85	22 55	—0.30	110 43 23 29	24 70	+1.41	15 5827						
	19 0 10 48.7	20 1 39 05	38 54	—0.51	110 31 15 44	17 70	+2.26	16 118						
	20 0 11 7.4	20 5 54 20	53 78	—0.42										
	21 0 11 25.5	20 10 8 85	8 26	—0.59	110 5 52 69	54 10	+1.41	16 167						
	22 0 11 42.3	20 14 22 30	21 97	—0.38	109 52 35 08	38 30	+3.22	16 047						
	23 0 11 58.9	20 18 35 36	34 88	—0.48	109 39 0 85	0 30	—0.55	15 5870						
	24 0 12 14.1	20 22 47 23	47 00	—0.23										
	25 0 12 28.9	20 26 58 56	58 32	—0.24	109 10 36 25	39 20	+2.95	16 110						
	26 0 12 42.8	20 31 9 09	8 80	—0.29										
	27 0 12 56				108 40 57 20	53 90	—3.30	16 196						
	28 0 13 8.0	20 39 27 64	27 32	—0.32	108 25 29 31	30 70	+1.39	16 182						
	29 0 13 19.6	20 43 35 76	35 30	—0.46	108 9 47 01	47 60	+0.59	16 090						
	30 0 13 30.3	20 47 43 14	42 46	—0.68	107 53 44 30	45 00	+0.70	15 5993						
	31 0 13 39.7	20 51 49 04	48 79	—0.25				16 230						
Feb	1 0 13 48.9	20 55 54 70	54 28	—0.42				16 248						
	2 0 13 57.0	20 59 59 35	58 93	—0.42	107 3 46 61	44 70	—1.91	16 216						
	3 0 14 4.5	21 4 3 31	2 78	—0.53	106 46 27 11	28 20	+1.09	16 150						
	4 0 14 10.9	21 8 6 38	5 80	—0.58	106 28 55 03	54 30	—0.73	16 030						
	5 0 14 16.8	21 12 8 81	8 00	—0.81	106 11 1 76	3 40	+1.64							
	6 0 14 21.6	21 16 10 27	9 38	—0.89	105 52 55 30	55 70	+0.40	16 166						
	7 0 14 24.9	21 20 10 04	9 97	—0.07	105 34 32 48	31 60	—0.88	16 430						
	8 0 14 28.5	21 24 10 32	9 77	—0.55	105 15 53 22	51 60	—1.62	16 120						
	9 0 14 31.0	21 28 9 47	8 78	—0.69	104 56 54 54	56 10	+1.56	16 068						
	10 0 14 32.7	21 32 7 77	7 03	—0.74				16 047						
	11 0 14 33.1	21 36 4 72	4 50	—0.22	104 18 17 81	19 90	+2.09							
	12 0 14 33.4	21 40 1 54	1 21	—0.33	103 58 38 24	40 10	+1.86	15 5898						
	13 0 14 32.8	21 43 57 52	57 16	—0.36	103 38 43 55	46 50	+2.95	15 5986						
	14 0 14 31.3	21 47 52 40	52 38	—0.02	103 18 40 46	39 50	—0.96	16 228						
	15 0 14 29.5	21 51 47 18	46 84	—0.34	102 58 16 62	19 40	+2.78	16 115						

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (C i d)													
A	S	Time	f	A R f m		E	f N A	N P D f m		N P D f	E r o f N A	M S mldi m	
				Ob	l			Ob	h			h	i	V i i
1836													
I b	16	0 14	27 0	21 55	41 20	40 7	—0 63	102 37	42 83	46 60	+ 3 77	16 0 06	
	17	0 14	23 4	21 59	34 09	33 7	—0 52	102 17	0 18	1 70	+ 1 52	16 59 75	
	18	0 14	19 1	22 3	26 24	25 85	—0 39	101 56	1 70	5 10	+ 3 40	16 2 17	
	19	0 14	13 9	22 7	17 63	17 40	—0 23	101 34	5 15	57 20	+ 2 05	16 1 10	
	20	0 14	8 4	22 11	8 67	8 27	—0 40	101 13	37 0	38 20	+ 0 50	16 0 75	
	21	0 14	1 6	22 14	58 47	58 41	—0 03	100 52	45	8 90	+ 3 4	16 3 18	
	22	0 13	55 0	22 18	48 41	47 91	—0 47					16 1 06	
	23	0 13	47 2	22 22	36 87	36 79	—0 08						
	24	0 13	39 0	22 26	2 28	21 99	—0 29	99 46	37 84	42 60	+ 4 76	16 2 90	
	25	0 13	30 6	22 30	13 47	12	—0 87	99 21	31 61	35 80	+ 4 19	16 0 24	
	26	0 13	20 5	22 33	9 81	59 50	—0 31	99 2	19 04	20 70	+ 1 66	16 1 48	
	27	0 13	10 4	22 37	46 16	4 88	—0 28	98 39	9 62	7 60	—2 02	16 1 38	
28	0 12	59 6	22 41	32 06	31 65	—0 41	98 17	27 14	27 20	+ 0 06	16 1 2		
29	0 12	48 1	22 45	17 22	16 88	—0 34	97 54	0 25	49 40	—0 89	16 1 42		
M r	1	0 12	36 2	22 49	2 1	1 7	—0 58	97 32	4 69	5 00	+ 0 31	16 2 30	
	2	0 12	23 6	22 52	46 02	4 71	—0 28	97 9	12 61	14 20	+ 1 9		
	3	0 12	10 8	22 56	29 69	29 41	—0 28	96 46	16 78	17 30	+ 0 2	16 1 10	
	4	0 11	7 5	23 0	13 02	12 61	—0 41	96 23	11 13	1 10	+ 3 77	16 1 32	
	5	0 11	43 8	23 3	55 67	5 36	—0 31	96 0	1 27	7 30	+ 3 03	16 2 48	
	6	0 11	29 1	23 7	37 60	37 70	+ 0 10	9 36	4 73	54 70	—0 03	16 3 38	
	7	0 11	1 3	23 11	20 16	19 64	—0 52	95 13	35 73	37 0	+ 1 77	16 1 12	
	8	0 11	0 5	23 15	1 91	1 19	—0 72	91 50	13 98	16 10	+ 2 12	16 2 78	
	9	0 10	41 6	23 18	42 63	42 30	—0 24	94 26	49 86	50 90	+ 1 04	16 0 62	
	10	0 10	29 1	23 22	23 56	23 26	—0 30	94 3	21 59	22 20	+ 0 61	16 0 67	
	11	0 10	12 8	23 26	3 86	3 80	—0 06	93 39	1 35	50 30	—1 0		
	12	0 9	56 9	23 29	44 36	44 06	—0 30	93 16	1 08	1 70	+ 0 62	16 2 72	
	13	0 9	40 3	23 33	24 33	24 02	—0 31	92 52	40 9	38 90	—1 69	16 2 45	
	14	0 9	23 9	23 37	4 12	3 72	—0 40	92 28	58 81	0 00	+ 1 19	16 1 70	1 85
	15	0 9	6 4	23 40	43 49	43 19	—0 30					16 1 68	16 2 12
	16	0 8	49 2	23 44	22 73	22 43	—0 30	91 41	5 58	37 90	+ 2 32	16 0 70	16 2
	17	0 8	31 8	23 48	1 66	1 4	—0 21	91 17	53 01	0	+ 2 46	16 4 14	16 2 33
	18	0 8	14 3	23 51	40 74	40 27	—0 47	90 4	10 49	12 70	+ 2 21	16 2 14	16 1 69
	19	0 7	56 4	23 55	19 27	18 93	—0 34	90 30	28 34	29 80	+ 1 46	16 2 56	16 1 76
	20	0 7	37 5	23 58	57 41	7 42	+ 0 01	90 6	42 1	47 40	+ 5 2		16 2 99
	21	0 7	19 9	0 2	35 87	35 80	—0 07						
	22	0 7	1 8	0 6	14 33	14 03	—0 30	89 19	21 83	25 00	+ 0 17	16 1 42	
	23	0 6	43 5	0 9	52 53	52 18	—0 35	88 55	47 90	45 90	—2 00	16 0 86	
	24	0 6	24 7	0 13	30 13	30 23	+ 0 10	88 32	8 95	8 70	—0 29	16 1 80	
	25	0 6	6 7	0 17	8 63	8 20	—0 43	88 8	32 6	33 70	+ 1 14	16 1 92	16 1 7
	26	0 5	47 9	0 20	46 28	46 14	—0 14	87 44	0 85	1 40	+ 0 55	16 1 86	16 68
	27	0 5	29										
	28	0 5	11 2	0 28	2 61	1 98	—0 63	86 58	4 38	6 00	+ 1 62	16 2 34	16 13
	29	0 4	52 2	0 31	40 04	39 92	—0 12	86 34	41 81	43 70	+ 1 89	16 2 28	
	30	0 4	33 8	0 3	18 07	17 89	—0 18	86 11	23 69	25 40	+ 1 71	16 3 65	
	31	0 4	15 2	0 38	56 02	55 90	—0 12	8 48	9 66	11 40	+ 1 71	16 2 05	
A1	1	0 3	6 8	0 42	34 32	34 02	—0 30	8 25	0 42	2 10	+ 1 68	16 2 17	
	2	0 3	38 5	0 46	12 53	12 2	—0 28	85 1	52 58	57 70	+ 5 12	16 1 32	
	3	0 3	20 4	0 49	50 90	50 60	—0 30	84 39	58 57	58 70	+ 0 13	16 1 06	
	4	0 3	2					84 16	6 91	5 20	—1 71	16 1 37	
	5	0 2	44 0	0 57	7 57	7 82	+ 0 25	83 53	15 71	17 60	+ 1 89	16 3 42	
	6	0 2	27 0	1 0	47 01	46 70	—0 31	83 30	33 10	36 00	+ 2 90	16 0 82	
	7	0 2	9 2	1 4	25 77	25 83	+ 0 06	83 7	59 74	1 10	+ 1 36	16 3 54	
	8	0 1	52 6	1 8	5 59	5 20	—0 39	82 45	29 68	32 90	+ 3 22	16 59 34	
	9	0 1	35 3	1 11	45 03	44 78	—0 25	82 23	8 08	12 10	+ 4 02		
	10	0 1	18 8	1 15	24 87	24 67	—0 20	82 0	54 97	58 80	+ 3 83	16 1 92	
	11	0 1	27	1 19	5 31	4 84	—0 47	81 38	51 88	53 50	+ 1 62		
	12	0 0	46 6	1 22	45 55	45 31	—0 24	81 16	56 06	56 30	+ 0 24	16 1 44	16 270

1 8)
16 2 12
16 2
16 2 33
16 1 69
16 1 76
16 2 99

16 1 7
16 68
16 1 3

16 2 70

RIGHT ASCENSION AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (*C tnu d*)

M	S la Tm f	Ob t	A R fr m Ob rv t	A R fr m N A	Err f N A	N P D fr m Ob tl	N P D from N A	Err f N A	M an S midlam ter	
									H tal	V ti al
1836			m							
Ap	13	0 0 308	1 26 26 35	26 10	—0 25	80 50 8 38	7 70	—0 68	16 0 90	
	14	0 0 154	1 30 7 41	7 22	—0 19				16 3 52	
	15	0 0 01	1 33 49 00	48 70	—0 30	80 12 57 56	57 70	+0 14	16 3 82	
	16	23 59 45 6	1 36 30 48	30 52	+0 04	79 50 36 48	37 00	+0 52	16 1 24	
	17	23 59 31 8	1 41 13 38	12 73	—0 60	79 29 24 64	26 30	+1 66	16 2 88	
	18	23 59 17 4	1 44 55 39	5 29	—0 10	79 8 23 52	26 10	+2 58	16 3 14	
	19	23 59 3 9	1 48 38 52	38 30	—0 22	78 47 35 01	36 40	+0 89	16 1 62	
	20	23 58 51 0	1 52 22 09	21 67	—0 42				16 1 20	
	21	23 58 38 2	1 56 5 86	5 47	—0 39	78 6 30 33	31 10	+0 77	16 0 64	
	22	23 58 25 7	1 59 49 95	49 70	—0 25	77 46 17 08	15 50	—1 08	16 2 94	
	23	23 58 14 0	2 3 34 84	34 34	—0 50	77 26 10 34	12 50	+2 16	16 0 18	
	24	23 58 2 2	2 7 19 45	19 44	—0 01	77 6 19 96	21 90	+1 94	15 58 60	
	25	23 57 51 8	2 11 5 65	5 00	—0 65	76 46 42 74	44 10	+1 36	16 3 72	
	26	23 57 41 2	2 14 51 63	51 02	—0 61	76 27 18 73	19 20	+0 47	16 1 46	16 0 26
	27	23 57 31 3	2 18 38 01	37 50	—0 51	76 8 7 49	8 00	+0 51	16 0 84	
	28	23 57 22 0	2 22 25 29	24 50	—0 79	75 49 10 65	10 40	—0 25	16 1 64	16 4 14
	29	23 57 13 0	2 26 12 51	11 99	—0 52	75 30 23 63	26 80	+3 17	16 1 52	
	30	23 57 3 8	2 30 0 48	0 01	—0 47	75 12 56 37	57 70	+1 33		
	31	23 56 55 6	2 33 48 65	48 55	—0 10	74 53 40 98	43 00	+2 02	16 2 10	
M y	1	23 6 48 6	2 37 38 19	37 61	—0 00	74 35 41 06	43 30	+2 24	16 1 40	
	2	23 56 42 1	2 41 27 13	27 30	+0 17	74 17 55 35	58 70	+3 35		
	4	23 56 29 0	2 49 8 16	8 30	+0 14	73 43 12 45	16 10	+3 65		
	5	23 56 23 6	2 52 9 43	59 66	+0 23	73 26 17 03	18 80	+1 27		16 59 66
	6	23 56 19 5	2 6 1 77	51 60	—0 17	73 9 35 97	37 70	+1 73	16 2 64	15 57 16
	7	23 56 15 5	3 0 44 32	44 13	—0 19	72 03 14 31	13 10	—1 21	16 2 88	
	8	23 6 12				72 37 3 30	6 10	+2 80	16 3 28	16 0 50
	9	23 56 9				72 21 15 88	16 00	+0 12	16 2 21	
	10	23 6 7 0	3 12 25 48	25 30	—0 18	72 5 41 34	43 60	+2 26		
	12	23 56 5				71 35 31 90	32 40	+0 50	16 0 70	
	13	23 56 4				71 20 56 66	54 50	—2 16	16 0 86	
	14	23 6 4 2	3 28 8 42	8 40	+0 03				16 0 52	
	15	23 56 4 0	3 32 6 23	5 69	—0 54	70 52 32 48	35 20	+2 72	16 5 40	16 2 66
	17	23 56 7 6	3 40 1 9	1 90	—0 07				16 3 56	
	18	23 56 9 8	3 44 0 87	0 81	—0 06	70 12 30 47	32 50	+2 03	16 6 78	
	19	23 56 12 6	3 48 0 18	0 27	+0 09	69 59 53 85	51 70	—2 15	16 5 96	
	20	23 56 16 1	3 52 0 10	0 28	+0 18	69 47 30 07	31 40	+1 33	16 5 96	
	21	23 56 20 2	3 56 0 84	0 78	—0 06	69 35 34 40	31 80	—2 60	16 3 74	16 1 26
	22	23 56 24 5	4 0 1 66	1 80	+0 14	69 23 51 92	53 20	+1 28	16 4 62	16 0 66
	3	23 56 29 4	4 4 3 51	3 31	—0 20	69 12 30 93	35 90	—0 03	16 5 76	15 08 73
	4	23 56 35 2	4 8 5 52	5 32	—0 20	69 1 38 15	39 90	+1 75	16 5 08	16 0 67
	25	23 56 41 4	4 12 8 12	7 85	—0 27	68 1 5 58	5 80	+0 22	16 1 18	
	27	23 56 4 6	4 20 14 56	14 23	—0 33	68 30 1 56	3 40	+1 84	16 1 40	
	8	23 57 1 9	4 24 18 42	18 13	—0 29				16 2 82	
	29	23 57 9 8	4 28 22 89	22 46	—0 43	68 12 28 74	30 10	+1 36	16 2 45	16 0 15
	30	23 57 17 9	4 32 27 57	27 23	—0 34	68 3 47 18	47 20	+0 02	16 2 70	
	31	23 57 26 5	4 36 33 17	32 43	—0 74	67 55 26 72	27 20	+0 48	16 1 46	
J	3	23 57 54 8	4 48 50 84	50 48	—0 36				16 3 78	
	4	23 8 4 6	4 52 57 64	57 69	+0 05				16 1 94	
	5	23 58 15 4	4 57 4 6	4 34	—0 31	67 19 34 50	34 80	+0 30	16 1 35	
	6	23 58 26 1	5 1 11 92	11 79	—0 13	67 13 34 92	35 10	+0 18	16 1 46	
	7	23 58 37 2	5 5 19 69	19 55	—0 14	67 9 55 33	59 20	+3 87	16 2 38	16 1 00
	8	23 58 48 8	5 9 27 86	27 61	—0 25	67 2 47 30	47 30	0 00	15 59 40	15 57 70
	9	23 59 0 6	5 13 36 23	35 95	—0 28	66 58 2 08	59 70	—2 38	16 1 28	
	10	23 59 12 4	5 17 44 68	44 53	—0 15	66 53 37 50	36 30	—1 20		
	11	23 59 25 3	5 21 54 05	53 34	—0 71	66 49 35 29	37 20	+1 91	16 2 10	16 1 55
	12	23 59 37 8	5 26 3 19	2 34	—0 85	66 46 3 96	2 70	—1 26	16 2 82	
	15	0 0 2 5	5 34 21 04	20 84	—0 20	66 40 3 73	7 50	+3 77	16 2 82	

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (Continued)

M	Solar Time of			A R from Observatio	A R from N A	Err	f N A	N P D from Observatio	N P D f m N A	Error	f N A	Mean S mid m t	
	Observatio											H i t l	V l
1836	m							/					
June	16	0	0 15 4	5 38 30 55	30 29	—0 26		66 37 46 98	46 80	—0 18		16 3 60	
	17	0	0 28 4	5 42 40 08	39 81	—0 27		66 35 50 50	51 00	+ 0 50		16 2 76	16 1 57
	18	0	0 41 4	5 46 49 66	49 41	—0 25		66 34 20 78	19 80	—0 98		16 2 60	
	19	0	0 54 1	5 50 58 99	59 03	+ 0 04		66 33 12 87	13 60	+ 0 73		16 2 02	
	20	0	1 7 7	5 55 9 29	8 65	—0 64		66 32 34 27	32 20	—2 07		16 2 28	
	21	0	1 20					66 32 14 40	15 70	+ 1 30		16 0 38	16 3 66
	22	0	1 33					66 32 23 82	24 00	+ 0 18		16 2 22	
	28	0	2 49 5	6 28 23 74	23 06	—0 68		66 41 55 38	53 90	—1 48			
	30	0	3 13					66 48 21 54	20 60	—0 94			16 3 02
	July	1	0	3 24					66 52 11 70	10 40	—1 30		16 1 98
2		0	3 36 2	6 44 56 82	56 42	—0 40		66 56 24 87	24 50	—0 37		16 1 98	16 1 08
3		0	3 47 3	6 49 4 49	4 15	—0 34						16 4 45	
5		0	4 8					67 11 30 09	31 00	+ 0 91		16 0 44	
6		0	4 19					67 17 22 00	20 90	—1 10		16 0 47	
7		0	4 29					67 23 32 49	34 50	+ 2 01		16 1 62	
9		0	4 48 1	7 13 44 69	44 06	—0 63		67 37 14 32	12 30	—2 02		16 0 92	16 0 7
10		0	4 56 7	7 17 49 94	49 48	—0 46		67 44 36 82	36 10	—0 72		15 59 88	16 8 74
11		0	5 4					67 52 24 72	22 90	—1 82		16 2 18	16 1 6
12		0	5 12					68 0 30 07	32 60	+ 2 53		16 0 78	
13		0	5 20					68 9 6 60	5 00	—1 60		16 3 31	
14		0	5 27 9	7 34 7 47	6 83	—0 64		68 17 58 60	59 90	+ 1 30		16 1 40	
15		0	5 34 0	7 38 10 26	9 95	—0 31		68 27 17 24	17 00	—0 24		16 2 52	
16		0	5 40 2	7 42 13 09	12 61	—0 48		68 36 57 81	56 20	—1 61		16 1 90	
17		0	5 45 7	7 46 15 22	14 71	—0 51		68 46 56 35	57 20	+ 0 85		16 2 02	
18		0	5 50					68 57 17 87	19 70	+ 1 83			
19		0	5 55 4	7 54 17 89	17 32	—0 57		69 8 6 17	3 80	—2 37		16 0 70	
20		0	5 59 2	7 58 18 25	17 80	—0 45		69 19 11 38	8 90	—2 48		16 1 68	
23		0	6 7					69 54 28 09	28 50	+ 0 41		16 1 26	16 0 32
26		0	6 8 9	8 22 8 48	8 25	—0 23		70 32 48 02	48 80	+ 0 78		16 0 72	
27		0	6 10 4	8 26 4 95	4 57	—0 38		70 46 17 03	14 50	—2 53		15 57 72	
28		0	6 9 4	8 30 0 50	0 28	—0 22		71 0 0 88	59 20	—1 68		16 1 86	16 0 0 3
30		0	6 5					71 28 25 13	24 50	—0 63		16 2 18	
Aug	2	0	5 55					72 13 22 91	18 80	—4 11		16 1 70	
	9	0	5 13					74 8 5 85	3 20	—2 65		16 1 30	16 9 14
	10	0	5 4					74 25 32 17	30 0	—1 67		16 0 86	
	14	0	4 25					75 37 49 58	47 50	—2 08			
	15	0	4 14					75 56 27 70	26 90	—0 80		16 1 40	16 9 42
	16	0	4 2					76 15 19 35	19 70	+ 0 35		16 2 40	
	17	0	3 50 0	9 46 32 10	32 06	—0 04		76 34 22 43	25 70	+ 3 27		16 0 62	
	18	0	3 37 1	9 50 15 95	15 67	—0 28		76 53 42 78	44 40	+ 1 62		16 1 92	16 0 11
	19	0	3 24					77 13 18 72	15 40	—3 32		16 2 64	
	21	0	2 55 8	10 1 24 21	23 90	—0 31						16 3 68	
	22	0	2 41					78 12 58 74	59 90	+ 1 16		16 2 42	
	23	0	2 25 5	10 8 47 00	46 90	—0 10		78 33 21 15	17 30	—3 85		16 2 05	
	25	0	1 54					79 14 23 97	24 20	+ 0 23		16 1 80	
	27	0	1 20 2	10 23 27 74	27 66	—0 08		79 56 13 57	11 90	—1 67		16 2 30	
S pt	6	23	57 53 5	11 3 22 55	22 45	—0 10						16 1 28	
	7	23	57 33 7	11 6 58 69	58 76	+ 0 07						16 2 25	
	8	23	57 12 7	11 10 34 77	34 91	+ 0 14		84 41 42 10	38 90	—3 20		16 1 26	
	10	23	56 31 9	11 17 46 79	46 73	—0 06		85 27 12 69	14 20	+ 1 51		16 2 00	
	11	23	56 10 8	11 21 22 28	22 47	+ 0 19		85 50 9 92	9 10	—0 82		16 1 62	16 0 79
	15	23	54 47 2	11 35 44 70	44 61	—0 09		87 22 30 87	29 20	—1 67		16 1 64	15 3 91
	16	23	54 26					87 45 43 10	42 60	—0 50			16 1 84
	17	23	54 5					88 8 56 27	58 50	+ 23		16 1 02	
	18	23	53 43 9	11 46 30 82	30 85	+ 0 03						15 58 00	
	19	23	53 23 0	11 50 6 42	6 30	—0 12		88 55 38 20	37 10	—1 10		15 59 72	16 0 85

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER, (Continued)

Mean Solar Time of Observation	A. R. from Observation	A. R. from N. A.	Error of N. A.	N. P. D. from Observation	N. P. D. from N. A.	Error of N. A.	Mean Semidiameter	
							Horizontal	Vertical
1836								
S pt 20 23 53 21	11 53 42 03	41 80	-0 23	89 18 0 58	58 70	-1 88	16 1 38	16 1 44
21 23 52 41 0	11 57 17 44	17 35	-0 09	89 42 21 63	21 80	+0 17	16 0 98	
22 23 52 20 3	12 0 53 26	53 00	-0 26				16 3 52	
23 23 51 59 3	12 4 28 85	28 78	-0 07				15 58 60	
24 23 51 39 1	12 8 4 59	4 68	+0 09	90 52 31 99	35 30	+3 31	15 58 20	
25 23 51 18 2	12 11 40 99	40 77	-0 22	91 16 2 91	0 10	-2 81	16 0 32	
26 23 50 58				91 39 24 80	24 70	-0 10	15 57 96	
27 23 50 38				92 2 51 71	48 70	-3 01	16 1 98	
28 23 50 18 8	12 22 30 75	30 31	-0 44	92 26 11 92	11 80	-0 12	16 0 84	
29 23 49 58 9	12 26 7 30	7 31	+0 01				15 59 20	
30 23 49 40 2	12 29 45 01	44 61	-0 40					
Oct 3 23 48 44 0	12 40 38 40	38 43	+0 03	94 22 42 55	41 20	-1 35	16 1 30	15 59 83
4 23 48 26				94 45 47 46	51 40	+3 94	16 3 16	
5 23 48 8 7	12 47 56 08	56 10	+0 02	95 9 56 75	58 20	+1 45	16 1 84	
6 23 47 51 6	12 51 35 55	35 53	-0 02				16 0 88	
7 23 47 34 7	12 55 15 20	15 40	+0 20	95 55 3 04	0 10	-2 94	16 0 80	
8 23 47 18 8	12 58 55 83	55 69	-0 14	96 17 55 34	54 50	-0 84	16 3 32	
9 23 47 3 1	13 2 36 57	36 54	-0 03	96 40 45 75	43 90	-1 85	16 2 92	
10 23 46 47 9	13 6 17 78	17 66	-0 12	97 3 23 40	27 90	+4 50	16 0 70	
11 23 46 33 2	13 9 59 67	59 37	-0 30	97 26 3 05	6 10	+3 05	16 1 40	
12 23 46 18 9	13 13 41 89	41 58	-0 31	97 48 36 25	38 10	+1 85	16 2 16	
13 23 46 4 8	13 17 24 40	24 32	-0 08	98 10 0 74	3 80	+3 06	16 1 70	
14 23 45 51 8	13 21 7 60	7 59	-0 01				16 3 67	
15 23 45 39 1	13 24 51 73	51 42	-0 31				16 3 84	
17 23 45 15 1	13 32 20 80	20 76	-0 04	99 39 29 96	32 50	+2 54	16 4 72	
18 23 45 4 2	13 36 6 33	6 31	-0 02	100 1 16 29	19 40	+3 11		
19 23 44 54 0	13 39 52 70	52 47	-0 23	100 23 57 45	57 20	-0 25	16 3 57	
20 23 44 44 2	13 43 39 34	39 27	-0 07	100 44 23 20	25 80	+2 60	16 2 50	
21 23 44 35 3	13 47 27 01	26 69	-0 32	101 5 44 07	44 50	+0 43	16 1 92	
22 23 44 26 9	13 51 15 15	14 82	-0 33				15 58 50	
23 23 44 19				101 47 49 84	51 50	+1 66	16 0 58	
24 23 44 12 4	13 58 53 74	53 14	-0 60	102 8 38 74	39 20	+0 46	16 2 82	
25 23 43 6				102 29 14 79	15 50	+0 71	16 0 82	
27 23 43 55 4	14 10 26 42	26 09	-0 33					
Nov 1 23 43 43				104 47 41 76	45 60	+3 84		16 1 16 16 1 48
4 23 43 46				105 43 36 44	40 30	+3 86		
5 23 43 47 5	14 45 47 82	47 83	+0 01	106 1 46 83	47 90	+1 07	16 4 10	
6 23 43 51 8	14 49 48 28	47 74	-0 54	106 19 37 38	39 40	+2 02	16 6 34	
7 23 43 55 7	14 53 48 66	48 50	-0 16				16 6 50	
8 23 44 0 7	14 57 50 36	50 11	-0 25	106 54 34 85	32 90	-1 95	16 4 77	
9 23 44 6 6	15 1 52 81	52 59	-0 22	107 11 35 49	34 00	-1 49	16 3 94	
10 23 44 13 7	15 5 56 57	55 91	-0 66				16 4 66	
11 23 44 21 1	15 10 0 52	0 07	-0 45	107 44 40 68	42 40	+1 72	16 4 45	
12 23 44 29				108 0 47 82	49 00	+1 18	16 3 40	
21 23 46 22				110 10 44 68	47 70	+3 02	16 5 62	16 1 16 16 1 48
22 23 46 38 8	15 55 40 60	40 21	-0 39	110 23 24 68	27 40	+2 72	16 5 54	
24 23 47 14 0	16 4 9 13	8 79	-0 34				15 58 70	
25 23 47 33 0	16 8 24 66	24 25	-0 41	110 59 6 67	9 80	+3 13	16 3 48	
26 23 47 52 6	16 12 40 86	40 43	-0 43	111 10 15 30	17 30	+2 00	16 4 77	
27 23 48 12 8	16 16 57 68	57 37	-0 31	111 21 2 19	0 80	-1 39		
28 23 48 34 0	16 21 15 53	15 00	-0 53	111 31 22 20	20 30	-1 90	16 2 12	
30 23 49 18				111 50 46 01	45 00	-1 01	16 2 56	
Dec 1 23 49 41 1	16 34 12 48	12 03	-0 45	111 59 48 47	50 00	+1 53	16 8 86	16 0 22
3 23 50 28 8	16 42 53 42	53 28	-0 14	112 16 44 32	43 30	-1 02	16 4 00	16 1 05
4 23 50 53 9	16 47 15 18	14 77	-0 41	112 24 31 25	31 30	+0 05	16 5 02	
5 23 51 19 2	16 51 37 10	36 87	-0 23	112 31 51 73	52 90	+1 17	16 4 76	

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (Continued)

M an S la Tim f				A R fr m		A R fr m		Err o f N A	N P D from		N P D		Err o f N A	M S midiam	
Obs a t i				Ob t i		N A			Obs r v t i		f m N A			I i r i t a l	
1836				m				/							
De				6 23 51 45 3	16 55 59 75	59 47	—0 28	112 38 50 59	48 20	—2 39	16 2 43				
				10 23 53 34 0	17 13 34 99	34 66	—0 33	113 1 0 98	0 20	—0 78	16 5 14				
				11 23 54 2 2	17 17 59 84	59 43	—0 41	113 6 41 07	40 00	—1 07	16 5 12				
				15 23 55 57				113 20 42 84	41 50	—1 34	16 5 56				
				16 23 56 27 0	17 40 7 85	7 60	—0 25	113 22 0 79	1 90	+ 1 11	16 4 85				
				18 23 57 26 7	17 49 0 82	0 23	—0 59	113 26 19 72	18 10	—1 62	16 3 14				
				19 23 57 56 2	17 53 27 01	26 71	—0 30								
				22 23 59 26 1	18 6 46 87	46 42	—0 45	113 27 14 26	11 30	—2 96	16 4 00	16 2 35			
				23 23 59 55 9	18 11 13 29	12 98	—0 31	113 26 16 77	14 00	—2 77	16 4 07	16 0 18			
				27 0 1 25				113 20 35 19	32 60	—2 59	16 4 40	15 59 14			
				28 0 1 54				113 17 44 80	42 50	—2 30	16 4 60	15 59 98			
				29 0 2 24				113 14 28 80	24 40	—4 40	16 2 17				
				31 0 3 21 7	18 42 15 54	15 64	+ 0 10	113 6 23 35	23 40	+ 0 05	16 3 14	16 2 70			
1837															
Jan				2 0 4 19				112 56 32 85	33 10	+ 0 25	16 5 17	16 0 13			
				3 0 4 46 8	18 55 30 60	30 46	—0 14	112 50 58 56	56 33	—2 23	16 8 18	16 1 07			
				5 0 5 42 0	19 4 18 87	18 53	—0 34	112 38 20 63	20 80	+ 0 17	16 7 34	15 58 76			
				6 0 6 8 9	19 8 42 53	41 93	—0 60	112 31 24 00	22 60	—1 40	16 6 85	15 59 41			
				7 0 6 35 3	19 13 5 30	4 87	—0 43	112 24 1 17	57 60	—3 57	16 5 85				
				8 0 7 0 6	19 17 27 68	27 29	—0 39	112 16 8 71	6 20	—2 51	16 6 13				
				9 0 7 26 0	19 21 49 45	49 19	—0 26	112 7 46 91	48 50	+ 1 59	16 3 82	16 1 77			
				10 0 7 51 0	19 26 11 03	10 54	—0 49	111 59 5 00	4 80	—0 20	16 3 37	15 59 14			
				11 0 8 14 8	19 30 31 52	31 27	—0 25	111 49 56 94	56 40	—0 54	16 3 4	16 0 32			
				12 0 8 38 3	19 34 51 76	51 40	—0 36	111 40 20 84	20 40	—0 44	16 2 82	15 59 07			
				13 0 9 1 0	19 39 10 99	10 88	—0 11				15 57 40				
				15 0 9 45				111 9 4 19	5 70	+ 1 51	16 0 52				
				16 0 10 5				110 57 51 44	51 90	+ 0 46	16 2 16	15 58 20			
				17 0 10 25				110 46 11 84	14 20	+ 2 36					
				18 0 10 45				110 34 12 11	12 90	+ 0 79	16 3 34				
				19 0 11 4 0	20 4 53 53	53 15	—0 38	110 21 46 98	48 30	+ 1 32	16 2 47				
				20 0 11 21 2	20 9 7 82	7 73	—0 09	110 8 59 47	0 90	+ 1 43	15 59 93	15 59 53			
				21 0 11 38 5	20 13 21 38	21 49	+ 0 11	109 55 50 94	50 79	—0 15	1 59 37	15 56 89			
				22 0 11 55 1	20 17 34 63	34 46	—0 17	109 42 18 60	18 55	—0 05	16 1 52	15 58 23			
				23 0 12 10 7	20 21 46 83	46 63	—0 20	109 28 23 85	24 45	+ 0 60	16 1 80	15 59 34			
				24 0 12 25 7	20 25 58 45	58 03	—0 42	109 14 6 31	8 80	+ 2 49	16 2 74	16 0 62			
				25 0 12 39 5	20 30 8 79	8 64	—0 15	108 59 28 62	32 00	+ 3 38	16 2 92				
				26 0 12 52 5	20 34 18 46	18 45	—0 01	108 44 31 66	34 40	+ 2 74	15 59 00	15 57 49			
				27 0 13 5 3	20 38 27 78	27 48	—0 30	108 29 14 65	16 50	+ 1 85	16 2 28	15 59 23			
				28 0 13 17 1	20 42 36 22	35 70	—0 52	108 13 37 18	38 30	+ 1 12	16 2 05	16 1 22			
				29 0 13 28 1	20 46 43 54	43 13	—0 41	107 57 38 06	40 40	+ 2 34	16 5 32				
				30 0 13 38 0	20 50 50 31	49 75	—0 56	107 41 23 06	23 20	+ 0 14	16 2 02	15 58 90			
Feb				1 0 13 55 4	20 59 0 80	0 59	—0 21	107 7 50 23	52 30	+ 2 07	16 2 08				
				2 0 14 7	21 3 4 66	4 78	+ 0 12	106 50 36 26	39 50	+ 3 24	16 5 02	15 58 97			
				3 0 14 10 1	21 7 8 55	8 17	—0 38	106 33 7 05	9 00	+ 1 95	16 2 52				
				4 0 14 15 7	21 11 10 75	10 74	—0 01	106 15 17 70	21 20	+ 3 50	16 1 62				
				5 0 14 21 2	21 15 12 96	12 49	—0 47	105 57 17 12	16 60	—0 52	16 2 14				
				6 0 14 25 6	21 19 13 84	13 40	—0 44	105 38 55 55	55 60	+ 0 05	16 1 00				
				7 0 14 28 8	21 23 13 43	13 52	+ 0 09	105 20 20 77	18 50	—2 27	16 1 98				
				8 0 14 31 5	21 27 12 69	12 82	+ 0 13	105 1 28 11	25 90	—2 21	16 3 30	16 3 91			
				9 0 14 33				104 42 18 25	18 20	—0 05		16 0 21			
				10 0 14 34 5	21 35 8 67	8 98	+ 0 31	104 22 53 53	55 70	+ 2 17	16 2 40				
				11 0 14 34 8	21 39 5 92	5 86	—0 06	104 3 17 60	18 90	+ 1 30	16 1 27	16 1 48			
				12 0 14 34				103 43 28 46	28 40	—0 06		15 59 47			
				13 0 14 33 5	21 46 57 52	57 23	—0 29	103 23 22 64	24 50	+ 1 86	16 2 02	16 2 49			
				14 0 14 31 5	21 50 52 04	51 80	—0 24	103 3 5 24	7 70	+ 2 46	16 1 70	15 59 78			
				15 0 14 28 7	21 54 4 65	45 57	—0 08	102 42 35 09	38 30	+ 3 21	16 1 70	16 4 62			
				16 0 14 25 5	21 58 39 21	38 60	—0 61	102 21 57 10	56 80	—0 30	16 1 44	16 0 21			
				17 0 14 21 3	22 2 31 69	30 90	—0 79	102 1 3 02	3 60	+ 0 58	16 2 90	16 0 85			

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (Continued)

M	Solar TIm		f	A R fr m		A R f m	Err	f N A	N P D from		N P D	fr m	N A	Err	f N A	M an 8 midl m	
	Ob	rvati		Obs	i				N A	Ob						rv i	H r i	t l	V i l
1837																	
I b	18	0 14	16 5	22	6 23	08	22 47	—0 61	101	39 58	38	59 20	+ 0 82	16	0 86	16	1 72
	19	0 14	10 4	22	10 13	54	13 35	—0 19	101	18 43	88	43 90	+ 0 02	16	2 58	16	4 46
	20	0 14	4 2	22	14 3 94		3 54	—0 40	100	7				16	1 52		
	21	0 13	56 9	22	17 53	19	53 06	—0 13	100	35 39	07	42 00	+ 2 93	16	3 00	16	2 02
	26	0 13	12 3	22	36 51	43	51 41	—0 02	98	45 21	33	23 50	+ 2 17	16	4 76		
	27	0 13	1 7	22	40 37	41	37 37	—0 04	98	22 52	56	54 60	+ 2 04	16	1 40	16	1 28
	28	0 12	50 8	22	44 22	94	22 78	—0 16	98	0 16	91	18 30	+ 1 39	16	1 70	16	0 45
M r	1	0 12	39 1	22	48 7 99		7 70	—0 29	97	37 34	48	35 10	+ 0 62	15	55 37	16	1 47
	2	0 12	26 7	22	51 52	19	52 11	—0 08	97	14 44	90	45 00	+ 0 10	15	57 38	15	58 17
	3	0 12	13 1	22	55 36	17	36 05	—0 12	96	51 51	52	48 70	—2 82	15	59 08	16	2 93
	4	0 12	1 0	22	59 19	70	19 52	—0 18	96	28 47	08	46 70	—0 38	16	0 99	16	2 61
	5	0 11	47 6	23	3 2 83		2 54	—0 29	96	5 38	85	39 10	+ 0 25	16	1 20		
	6	0 11	33 9	23	6 45	61	45 11	—0 50	95	42 25	19	26 50	+ 1 31	15	58 74	16	2 27
	7	0 11	19 3	23	10 27	32	27 27	—0 05	95	19 8 97		9 30	+ 0 33	16	1 90	15	58 81
	8	0 11	4 6	23	14 9 22		9 01	—0 21	94	55 49	93	47 90	—2 03	16	0 04	16	0 79
	9	0 10	49 4	23	17 50	52	50 37	—0 15	94	32 22	38	22 70	+ 0 32	16	2 34	16	0 74
	10	0 10	33 9	23	21 31	50	31 39	—0 11	94	8 56	79	54 00	—2 79	16	1 80	16	3 34
	11	0 10	18 4	23	25 12	64	12 03	—0 61	93	45 22	62	22 30	—0 32	16	1 58	15	59 39
	12	0 10	1 6	23	28 52	29	52 35	+ 0 06	93	21 45	58	48 00	+ 2 42	16	2 58	16	1 12
	13	0 9	45 6	23	32 32	85	32 37	—0 48	92	58 11	69	11 50	—0 19	16	2 47	15	58 59
	14	0 9	29						92	34 33	37	33 20	—0 17	16	0 50	16	0 85
	15	0 9	12						92	10 53	93	53 50	—0 43	16	3 37	15	59 77
	16	0 8	54						91	47 11	05	12 70	+ 1 65	16	2 05	16	1 40
	17	0 8	36 2	23	47 9 65		9 63	—0 02	91	23 28	95	31 20	+ 2 25	16	0 98	16	1 11
	18	0 8	19						90	59 47	36	49 40	+ 2 04	15	59 45		
	19	0 8	1						90	36 12	08	7 70	—4 38	16	1 48	16	1 04
	20	0 7	43						90	12 25	98	26 30	+ 0 32	16	2 82	16	2 33
	21	0 7	25						89	48 40	88	45 40	+ 4 52	15	55 82		
	22	0 7	6						89	25 4 43		5 90	+ 1 47	16	1 88	15	59 32
	23	0 6	47 7	0	8 59	74	59 67	—0 07	89	1 25	55	27 0	+ 1 95	16	1 40	15	58 81
	24	0 6	29 2	0	12 37	77	37 61	—0 16	88	37 48	99	50 80	+ 1 81	15	59 34	15	59 66
	25	0 6	10						88	14 14	26	16 10	+ 1 84	16	0 68		
	26	0 5	52						87	50 44	05	43 70	—0 35	16	1 44		
	27	0 5	33 6	0	23 31	73	31 32	—0 41	87	27 12	47	13 90	+ 1 43	16	0 87	16	2 65
	28	0 5	14						87	3 44	41	47 20	+ 2 79	16	0 84	16	2 76
	29	0 4	56						86	40 21	39	23 60	+ 2 21	16	0 48	16	0 78
	30	0 4	37 9	0	34 25	55	25 25	—0 30	86	17 4 11		3 80	—0 31	16	1 25	15	59 61
	31	0 4	19 1	0	38 3 24		3 36	+ 0 12	85	53 46	03	48 10	+ 2 07	16	1 97	16	0 91
April	1	0 4	14	0	41 41	90	41 57	—0 33									
	2	0 3	42 0	0	45 19	99	19 89	—0 10	85	7 28	56	30 10	+ 1 54	16	0 64		
	3	0 3	24 9	0	48 58	45	58 36	—0 09	84	44 30	92	28 60	—2 32	16	0 35	15	59 74
	4	0 3	7						84	21 36	63	32 60	—4 03	16	0 77	15	59 77
	5	0 2	49						83	58 43	34	42 40	—0 94	15	59 50	16	2 88
	6	0 2	32						83	36 1 88		58 0	—3 38	15	59 20	16	3 81
	7	0 2	14 2	1	3 33	78	33 86	+ 0 08	83	13 23	89	21 00	—2 89	15	59 80		
	8	0 1	57 4	1	7 13	40	13 23	—0 17	82	50 50	89	0 60	—0 29	16	0 37	16	3 98
	9	0 1	40 5	1	10 52	96	52 82	—0 14	82	28 27	41	27 50	+ 0 09	16	1 96		
	11	0 1	7 4	1	18 12	83	12 75	—0 08	81	44 5 73		4 60	—1 13	16	1 43	15	58 53
	12	0 0	51 0	1	21 52	92	53 10	+ 0 18	81	22 6 46		5 60	—0 86	16	2 00	16	1 03
	13	0 0	35 3	1	25 33	83	33 75	—0 08	81	0 17	12	1 40	—1 72	16	0 60	15	59 21
	14	0 0	20 0	1	29 15	06	14 71	—0 35	80	38 36	07	34 10	—1 97	16	0 90	15	59 92
	15	0 0	4 5	1	32 55	94	5 96	+ 0 02	80	17 1 40		2 30	+ 0 90	16	1 62	15	58 85
	15	23	59 50						79	55 40	48	40 30	—0 18	16	0 28	16	0 86
	16	23	59 34 7	1	40 19	31	19 50	+ 0 19	79	34 31	02	28 40	—3 12	15	59 84	16	0 73
	17	23	59 20 9	1	44 2 02		1 83	—0 19	79	13 25	64	26 70	+ 1 06	16	1 57	15	59 28
	18	23	59 6 8	1	47 44	38	44 53	+ 0 15	78	52 30	84	3 80	+ 4 96	16	4 4	15	57 19
	19	23	58 53 8	1	51 27	87	27 65	—0 22	78	31 59	91	55 80	—0 11	16	2 18	16	1 60

RIGHT ASCENSION AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (Continued)

Mean Solar Time Observation	A. R. from Observation	A. R. from N A	Err. f N A.	N P D from Observation	N P D from N A	E. f N A	Mean Sidereal Time	
							Hour	Minute
1837								
April 20 23 58 40.5	1 55 11 20	11 20	0 00	78 11 29 29	27 00	-2 29	16 0 15	15 59 70
21 23 58 28.2	1 58 55 42	55 17	-0 25	77 52 8 47	9 90	+1 43	16 1 42	16 1 25
22 23 58 15.8	2 2 39 60	39 60	0 00	77 32 5 97	4 50	-1 47	16 2 07	16 0 27
23 23 58 4.3	2 6 24 63	24 61	-0 12	77 11 12 08	11 40	-0 68	16 0 90	16 1 54
24 23 57 53.4	2 10 10 23	9 91	-0 32	76 51 32 49	30 70	-1 79	16 1 26	15 58 90
25 23 57 42.7	2 13 55 95	55 80	-0 15	76 32 2 34	2 80	+0 46	16 1 70	16 0 06
26 23 57 32.7	2 17 42 43	42 22	-0 21	76 12 48 81	48 00	-0 81	16 0 97	16 2 09
27 23 57 23.2	2 21 29 50	29 13	-0 37	75 53 45 40	46 60	+1 20	16 1 30	16 1 25
28 23 57 13.7	2 25 16 56	16 69	+0 03	75 35 58 69	59 00	+0 31	16 0 24	16 0 99
29 23 57 5.3	2 29 4 70	4 59	-0 11	75 16 22 99	25 50	+2 51	16 2 32	16 0 05
30 23 56 57.5	2 32 53 35	53 11	-0 24	74 58 7 99	6 50	-1 49	16 2 18	15 59 72
May 1 23 56 50.0	2 36 42 35	42 20	-0 15	74 39 59 40	2 10	+2 70	16 0 92	15 59 75
2 23 56 43.3	2 40 32 24	31 86	-0 38	74 22 10 42	13 00	+2 58	16 0 92	15 59 77
3 23 56 36.7	2 44 22 34	22 06	-0 28	74 4 36 31	39 20	+2 89	16 0 95	15 59 52
4 23 56 31				73 47 19 58	21 20	+1 62	16 1 40	15 59 09
5 23 56 26				73 30 17 88	19 30	+1 42	15 59 54	16 1 33
7 23 56 17				72 57 2 74	4 90	+2 16	16 1 10	15 57 69
8 23 56 13				72 40 50 86	53 30	+2 44	16 0 60	16 1 75
9 23 56 10.4	3 7 35 42	35 22	-0 20	72 24 57 39	58 80	+1 41	16 1 98	
10 23 56 8.3	3 11 29 69	29 36	-0 33	72 9 21 29	22 30	+1 01	16 1 37	16 0 35
11 23 56 6.6	3 15 24 40	24 07	-0 33	71 54 3 02	3 70	+0 68	16 0 46	16 1 14
12 23 56 5				71 39 3 37	3 30	-0 07	16 1 90	
13 23 56 5				71 24 20 59	21 50	+0 91		
14 23 56 5				71 9 58 07	58 60	+0 53	16 2 05	
15 23 56 5				70 55 52 81	54 70	+1 89	16 0 64	
16 23 56 6				70 42 7 53	10 20	+2 67		
17 23 56 8				70 28 49 76	45 30	-4 46	15 59 62	
22 23 56 22				69 26 45 98	43 00	-2 98		
23 23 56 27.6	4 3 4 28	3 87	-0 41	69 15 22 71	20 50	-2 21	16 2 56	
24 23 56 33.0	4 7 6 37	5 72	-0 65	69 4 21 81	19 40	-2 41	16 1 82	16 2 23
27 23 56 51				68 33 25 65	25 50	-0 15	16 0 48	
29 23 57 6.8	4 27 23 03	22 62	-0 41				16 2 47	
30 23 57 15.0	4 31 27 76	27 43	-0 33	68 5 47 62	51 30	+3 68		
31 23 57 23				67 57 25 16	25 20	+0 04	16 1 04	
June 1 23 57 32.5	4 39 38 21	38 37	+0 16	67 49 21 42	22 00	+0 58	16 0 82	
2 23 57 42				67 41 43 80	42 00	-1 80	16 1 02	
3 23 57 52				67 34 24 65	25 30	+0 65	16 1 37	
4 23 58 2.0	4 51 57 48	57 70	+0 22	67 27 31 80	32 20	+0 35	16 1 06	15 59 98
5 23 58 13.7	4 56 4 75	4 85	+0 10	67 20 2 31	2 70	+0 39	16 2 22	
6 23 58 23.7	5 0 12 30	12 31	+0 01	67 14 57 27	57 00	-0 27	16 1 35	
7 23 58 35.2	5 4 20 40	20 02	-0 38	67 9 15 50	15 40	-0 10	16 1 66	15 58 59
8 23 58 46.6	5 8 28 32	28 02	-0 30	67 3 57 93	57 90	-0 03	16 4 40	
9 23 58 58.3	5 12 36 58	36 26	-0 32	66 59 5 85	4 60	-1 25	16 1 66	
10 23 59 10.2	5 16 45 11	44 68	-0 43	66 54 36 35	35 60	-0 75	16 3 54	
11 23 59 21.8	5 20 53 30	53 34	+0 04	66 50 34 57	31 00	-3 57	16 2 82	
12 23 59 34.0	5 25 2 12	2 16	+0 04	66 46 45 44	50 90	+5 46	16 1 75	
13 23 59 46.4	5 29 10 98	11 12	+0 14	66 43 37 82	35 40	-2 42	16 0 86	
14 23 59 59.3	5 33 20 60	20 22	-0 38	66 40 45 82	44 40	-1 42	16 0 57	
16 0 0 11.9	5 37 29 79	29 43	-0 36	66 38 16 84	18 10	+1 26	16 0 02	
17 0 0 24.1	5 41 38 61	38 76	+0 15	66 36 16 26	16 50	+0 24	16 0 72	
18 0 0 37				66 34 35 64	39 50	+3 86	15 59 84	
19 0 0 50				66 33 27 60	27 40	-0 20	16 3 54	
22 0 1 28.0	6 2 25 94	26 05	+0 11	66 32 19 02	19 20	+0 18	16 2 52	
23 0 1 41.2	6 6 35 60	35 54	-0 06	66 32 45 77	46 10	+0 33	16 0 75	
24 0 1 53.8	6 10 44 76	44 98	+0 22				15 59 50	
25 0 2 6.7	6 14 54 20	54 33	+0 13	66 34 57 42	54 00	-3 42	16 1 22	
26 0 2 19.3	6 19 3 92	3 60	-0 32	66 36 33 33	35 10	+1 77	16 0 75	

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (*Continued*)

M	S	Time	A. R. from	A. R. from	Err. from A	N. P. D. from	N. P. D. from	Err. from A	Mean
Ob	rv	t	Ob	rv	t	Ob	rv	t	H
1837		m							
June	27	0 2 31.7	6 23 12.43	12 76	+0.33	66 38 42.16	40 80	-1.36	16 0.88
	29	0 2 56.7	6 31 30.61	30 65	+0.04	66 44 4.27	6 30	+2.03	15 59.95
	30	0 3 8.8	6 35 39.58	39 33	-0.25	66 47 26.61	25 70	-0.91	15 57.82
July	1	0 3 21				66 51 12.11	9 70	-2.41	15 59.20
	2	0 3 32				66 55 21.91	18 00	-3.91	15 59.95
	3	0 3 43.0	6 48 4.92	4 01	-0.91				15 58.58
	4	0 3 55				67 4 47.50	47 00	-0.50	16 0.12
	5	0 4 6				67 10 8.81	7 70	-1.11	16 0.70
	6	0 4 16				67 15 56.07	52 10	-3.97	15 59.95
	7	0 4 26				67 22 2.17	0 10	-2.07	16 0.92
	8	0 4 35.6	7 8 39.58	39 01	-0.57	67 28 26.54	32 00	+5.46	16 0.86
	9	0 4 45.3	7 12 44.99	44 88	-0.11	67 35 27.89	27 10	-0.79	16 1.35
	10	0 4 54.0	7 16 50.15	50 33	+0.18	67 42 43.61	45 40	+1.79	16 1.77
	11	0 5 2.5	7 20 55.43	55 34	-0.09	67 50 31.38	26 80	-4.58	16 1.30
	12	0 5 10.5	7 24 59.84	59 88	+0.04	67 58 28.44	31 00	+2.56	16 2.45
	13	0 5 18.7	7 29 4.62	3 98	-0.64	68 6 56.67	57 80	+1.13	
	14	0 5 25.6	7 33 8.11	7 57	-0.57	68 15 41.48	47 20	+5.72	15 59.34
	15	0 5 32.3	7 37 11.38	10 66	-0.72	68 24 0.91	58 70	-2.21	16 1.44
	16	0 5 37.6	7 41 13.36	13 26	-0.10	68 34 30.68	32 20	+1.52	16 1.12
	17	0 5 43				68 44 28.58	27 50	-1.08	
	18	0 5 48.5	7 49 17.40	16 88	-0.52				15 59.50
	19	0 5 52.9	7 53 18.52	17 91	-0.61	69 5 26.15	22 60	-3.55	16 2.30
	20	0 5 56.4	7 57 18.51	18 41	-0.10				
	23	0 6 4.8	8 9 16.77	16 55	-0.22	69 51 25.20	25 10	-0.10	16 1.06
	24	0 6 6				70 3 46.31	47 00	+0.69	16 0.08
	27	0 6 8				70 42 52.73	51 80	-0.93	
	28	0 6 8.1	8 29 3.04	2 32	-0.72	70 56 30.35	32 30	+1.95	16 0.37
	29	0 6 7				71 10 35.46	31 60	-3.86	16 1.62
	30	0 6 5				71 24 49.13	49 70	+0.67	16 2.14
	31	0 6 3				71 39 28.02	26 30	-1.72	16 2.27
Aug	2	0 5 56.6	8 48 34.21	33 50	-0.71	72 9 31.97	33 10	+1.13	15 59.56
	5	0 5 42				72 56 55.26	54 10	-1.16	16 0.70
	7	0 5 29.6	9 7 49.62	49 46	-0.16	73 29 52.83	51 30	-1.53	16 0.82
	9	0 5 14.7	9 15 27.73	27 60	-0.13	74 3 53.08	52 20	-0.88	16 1.50
	10	0 5 6.5	9 19 16.00	15 76	-0.24	74 21 15.14	15 70	+0.56	16 1.24
	11	0 4 57.6	9 23 3.65	3 33	-0.32	74 38 51.64	54 20	+2.56	16 0.95
	1	0 4 48.1	9 26 50.67	50 32	-0.35	74 56 47.94	47 40	-0.54	16 1.06
	13	0 4 37.7	9 30 36.80	36 74	-0.06	75 15 56.81	54 90	-1.91	16 0.20
	20	0 3 12				77 28 3.15	3 90	+0.75	15 58.74
	21	0 2 57.9	10 0 29.38	28 96	-0.42				
	22	0 2 42.8	10 4 10.69	10 80	+0.11	78 7 56.94	58 90	+1.96	16 0.64
	23	0 2 28.1	10 7 52.48	52 21	-0.27	78 28 12.19	13 60	+1.41	16 0.24
	24	0 2 12.3	10 11 33.31	33 22	-0.09	78 48 41.66	39 50	-2.16	15 59.84
	25	0 1 56				79 9 12.36	16 10	+3.74	15 59.12
	28	0 1 6.4	10 26 13.48	13 31	-0.17				16 0.64
	29	0 0 48.9	10 29 52.51	52 41	-0.10	80 33 21.37	23 90	+2.53	16 1.44
	30	0 0 31				80 54 54.10	49 50	-4.60	16 0.28
	31	0 0 13				81 16 21.43	23 90	+2.47	16 0.55
	31	23 59 55				81 38 8.01	6 60	-1.41	15 59.92
Sept	1	23 59 36				81 59 54.89	57 60	+2.71	
	3	23 58 58				82 44 1.19	2 20	+1.01	16 1.10
	4	23 58 38				83 6 13.55	15 30	+1.75	16 2.98
	6	23 57 58				83 50 58.56	1 10	+2.54	16 1.80
	7	23 57 38				84 13 33.86	33 20	-0.66	15 59.64
	8	23 57 18.2	11 9 43.18	42 73	-0.45	84 36 6.76	10 90	+4.14	15 59.70
	9	23 56 57				84 58 54.08	54 10	+0.02	16 2.20

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (Continued)

M	Sol	Time	f	A R f m	A R f m	Err	f N A	N P D f m	N I D	Err	f N A	M
Ob	rv	tlp		Ob	tl			Ob	tl			tl s mld
1837			m									
Sept	10	23	56	36				85	21	41	68	15 59 82
	11	23	56	15 6	11 20	30 11	30 04	85	44	37	23	16 0 86
	12	23	55	54 7	11 24	5 72	5 56	86	7	32	10	16 0 60
	13	23	55	33 7	11 27	41 20	41 00	86	30	35	56	16 1 17
	14	23	55	12 6	11 31	16 69	16 37	86	53	35	88	16 0 52
	15	23	54	51 3	11 34	51 78	51 71	87	16	47	79	16 0 37
	16	23	54	30 6	11 38	27 60	27 03	87	39	57	27	16 1 15
	17	23	54	9 1	11 42	2 70	2 36	88	3	13	08	16 0 66
	18	23	53	47 7	11 45	37 76	37 74	88	26	33	45	16 1 37
	19	23	53	27 0	11 49	13 46	13 17	88	49	53	09	16 0 20
	20	23	53	5 6	11 52	48 59	48 65	89	13	13	19	16 0 22
	21	23	52	45 1	11 56	24 38	24 26	89	36	39	24	16 0 77
	22	23	52	24 1	12 0	0 02	0 00	89	59	58	08	15 59 77
	23	23	52	3 2	12 3	35 65	35 86	90	23	25	55	16 1 44
	24	23	51	43 2	12 7	12 08	11 87	90	46	51	11	16 0 55
	25	23	51	22 8	12 10	48 25	48 05	91	10	16	81	15 59 97
	26	23	51	2 7	12 14	24 73	24 43	91	33	42	12	16 1 06
	27	23	50	42 6	12 18	1 04	1 04	91	57	11	92	
Oct	4	23	48	31				94	40	17	18	16 0 22
	5	23	48	13				95	3	28	05	16 0 48
	6	23	47	56				95	25	32	67	16 0 57
	8	23	47	23								16 1 12
	9	23	47	7 2	13 1	43 52	43 17	96	35	18	55	16 0 28
	10	23	46	51				96	57	57	89	15 59 68
	11	23	46	37				97	20	41	16	16 1 90
	12	23	46	22 0	13 12	47 81	47 53	97	43	8 43	10 40	16 0 92
	13	23	46	8 1	13 16	30 42	29 98	98	5	36	28	16 0 22
	15	23	45	41 4	13 23	56 83	56 56	98	50	5 67	8 10	
	16	23	45	29				99	12	9 36	12 80	15 59 12
	17	23	45	17				99	34	6 64	9 60	15 59 42
	20	23	44	45				100	39	11 34	9 60	16 0 92
	21	23	44	36				101	0	34 33	31 40	16 1 15
	22	23	44	28				101	21	39 78	43 30	15 59 84
	23	23	44	20				101	42	49 17	45 20	15 59 42
	24	23	44	13				102	3	35 49	36 50	16 0 60
Nov	5	23	43	47				105	57	34 32	30 80	15 58 18
	12	23	44	27				107	56	54 56	55 50	15 59 58
	18	23	45	33								16 2 56
	20	23	46	1 8	15 46	13 36	13 24					
	23	23	46	51				110	32	50 94	49 10	16 0 30
	24	23	47	9				110	44	51 83	49 60	
	25	23	47	28				110	56	25 51	26 90	15 59 56
	26	23	47	48 3	16 11	39 41	38 71	111	7	42 82	40 70	
	28	23	48	29				111	28	57 31	56 10	16 0 48
	29	23	48	51				111	39	0 00	57 10	15 59 75
	30	23	49	13				111	48	35 82	33 30	
Dec	1	23	49	36				111	57	48 25	44 20	16 0 84
	9	23	52	59				112	55	39 31	35 00	15 58 98
	10	23	53	27								16 0 00
	13	23	54	52				113	13	45 44	44 20	15 59 92
	14	23	55	20				113	17	10 04	7 60	16 1 75
	15	23	55	50				113	19	2 73	3 00	16 1 08
	18	23	57	18 3	17 47	55 27	55 06	113	28	2 59	1 00	15 58 90
	19	23	57	48 0	17 52	21 83	21 58	113	27	8 38	4 00	15 59 38
	20	23	58	17 8	17 56	48 22	48 20	113	27	38 80	38 70	
	22	23	59	18				113	27	27 62	22 90	

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (Continued)

Mean Solar Time of Observation	Right Ascension of the Sun	Right Ascension of the Star	Parallax of the Star	North Polar Distance of the Sun	North Polar Distance of the Star	Error of the Star	Mean Hourly Motion
Obs. Time	Obs. RA	Star RA	Star PA	Obs. NPD	Star NPD	Star Error	Hourly Motion
1838 Feb 28 0 12 53	m			98 5 43 01	46 00	+ 2 99	16 0 10
Mar 4 0 12 46	22 58 25 95	25 61	- 0 34	96 34 17 91	20 20	+ 2 29	16 1 10
5 0 11 51 1	23 2 8 97	8 64	- 0 33	96 11 13 21	14 40	+ 1 19	16 1 19
6 0 11 37 2	23 5 51 63	51 22	- 0 41	95 48 2 89	3 80	+ 0 91	15 58 70
8 0 11 8 2	23 13 15 63	15 06	- 0 57	95 1 25 32	29 10	+ 3 78	15 59 73
9 0 10 52 6	23 16 56 57	56 36	- 0 21	94 38 6 87	5 90	- 0 97	16 1 25
10 0 10 37 0	23 20 37 47	37 29	- 0 18	94 14 36 72	39 30	+ 2 58	16 1 67
11 0 10 21 1	23 24 18 08	17 88	- 0 20	93 51 7 81	9 50	+ 1 69	
12 0 10 5 2	23 27 58 65	58 16	- 0 49	93 27 35 51	37 10	+ 1 59	16 0 88
13 0 9 48 6	23 31 38 58	38 13	- 0 45	93 4 3 34	2 00	- 1 34	16 0 63
14 0 9 31 7	23 35 18 23	17 82	- 0 41	92 40 23 83	24 80	+ 0 97	15 59 17
16 0 8 57 5	23 42 36 97	36 48	- 0 49	91 53 6 34	5 80	- 0 54	16 2 15
17 0 8 39 8	23 46 15 82	15 49	- 0 33	91 29 21 49	24 60	+ 3 11	16 1 55
18 0 8 22 2	23 49 54 68	54 32	- 0 36	91 5 43 09	42 60	- 0 49	15 59 17
19 0 8 4 5	23 53 33 49	33 00	- 0 49	90 42 59 90	0 30	+ 0 40	15 59 59
20 0 7 46 0	23 57 11 45	11 50	+ 0 05	90 18 18 06	18 00	- 0 06	16 1 70
21 0 7 28 0	0 0 49 98	49 90	- 0 08	89 54 35 21	36 00	+ 0 79	
22 0 7 10 3	0 4 28 83	28 18	- 0 65	89 30 52 87	55 00	+ 2 13	16 1 12
23 0 6 51 9	0 8 6 84	6 38	- 0 46	89 7 10 49	15 00	+ 4 51	
24 0 6 33 6	0 11 45 07	44 71	- 0 6	88 43 37 02	36 70	- 0 32	
25 0 6 14 8	0 15 22 77	22 58	- 0 19	88 19 0 33	0 20	- 0 13	16 1 41
26 0 5 56 5	0 19 1 00	0 62	- 0 38	87 56 23 78	26 00	+ 2 22	16 1 55
27 0 5 38 0	0 22 38 99	38 63	- 0 36	87 32 57 07	54 50	- 2 57	15 59 75
28 0 5 19 4	0 26 16 98	16 66	- 0 32	87 9 24 11	26 00	+ 1 89	16 0 08
30 0 4 42 5	0 33 33 06	32 75	- 0 31	86 22 39 16	39 70	+ 0 54	16 0 74
31 0 4 24				85 59 20 23	22 70	+ 2 47	15 59 24
April 1 0 4 57	0 40 49 28	49 06	- 0 22	85 36 7 68	10 30	+ 2 62	16 1 03
2 0 3 47 6	0 44 27 62	27 30	- 0 30	85 13 19 0	2 60	+ 0 65	16 1 76
3 0 3 29 7	0 48 6 29	5 68	- 0 61	84 49 4 40	0 40	+ 6 00	15 59 24
4 0 3 11 6	0 51 44 62	44 16	- 0 46	84 27 1 84	3 60	+ 1 76	16 0 92
5 0 2 53 0	0 55 23 10	22 78	- 0 32	84 4 9 10	12 90	+ 3 80	16 0 76
6 0 2 36 0	0 59 2 11	1 50	- 0 06	83 41 28 18	28 40	+ 0 22	16 1 23
7 0 2 18 3	1 2 40 93	40 52	- 0 41	83 18 49 61	0 0	+ 0 89	16 0 39
9 0 1 43 8	1 9 59 43	59 09	- 0 34	82 33 53 58	55 70	+ 2 12	16 0 21
10 0 1 27 0	1 13 39 08	38 73	- 0 35	82 11 38 00	39 40	+ 1 40	15 59 94
11 0 1 10 4	1 17 19 07	18 60	- 0 42	81 44 30 42	30 90	+ 0 48	15 59 38
12 0 0 54 3	1 20 59 42	58 84	- 0 58				15 59 79
15 23 59 52				80 0 59 40	56 50	- 2 90	16 2 98
18 23 59 94	1 46 50 16	49 94	- 0 22	78 57 39 36	42 00	+ 2 64	16 0 97
19 23 58 56 3	1 50 33 39	33 11	- 0 28	78 36 59 44	58 20	- 1 24	16 1 46
20 23 58 43 3	1 54 17 00	16 69	- 0 31	78 16 23 57	25 50	+ 1 93	16 0 83
21 23 58 31				77 56 5 38	4 30	- 1 08	16 0 19
22 23 58 18 5	2 1 45 28	45 21	- 0 07	77 35 50 76	54 90	+ 4 14	15 59 50
23 23 58 7 1	2 5 30 35	30 16	- 0 19	77 15 58 34	57 80	- 0 54	15 59 73
24 23 57 56				76 56 7 34	13 20	+ 5 86	15 59 86
26 23 57 35 4	2 16 48 32	47 90	- 0 42				16 0 97
27 23 57 26 0	2 20 35 35	34 79	- 0 56	75 58 12 04	17 30	+ 5 26	16 3 30
28 23 57 16				75 39 24 94	26 20	+ 1 26	16 1 90
29 23 57 8 1	2 28 10 71	10 16	- 0 55	75 20 51 28	49 20	- 2 08	16 0 79
May 1 23 56 52				74 44 16 26	19 30	+ 3 04	16 1 86
3 23 56 38 8	2 43 27 39	26 81	- 0 58	74 8 52 70	0 10	- 2 60	16 1 56
5 23 56 27 0	2 51 8 73	8 41	- 0 32	73 34 22 34	24 00	+ 1 66	16 1 43
6 23 56 22 2	2 55 0 42	0 01	- 0 41	73 17 37 41	35 50	- 1 91	16 1 53
8 23 56 14 4	3 2 45 73	44 95	- 0 78	72 44 44 85	48 40	+ 3 55	16 2 36
9 23 56 11 0	3 6 38 87	38 28	- 0 59	72 28 50 84	0 50	- 0 34	16 2 21
10 23 56 8 1	3 10 32 79	32 19	- 0 60	72 13 4 56	11 00	+ 6 44	16 2 32

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN CENTER (Corrected)

Mean Solar Time of Observation		A R from Observation	A R from N A	E f N A	N P D f m Observation	N P D from N A	T f N A	M H S id
1838								
May	11 23 56 62	3 14 27 23	26 69	-0 54	71 57 48 23	47 0	-0 73	16 2 40
	12 23 56 50	3 18 22 58	21 78	-0 80	71 42 39 45	42 80	+ 3 35	16 3 53
	13 23 56 39	3 22 17 96	17 45	-0 51	71 27 59 25	56 30	-2 95	16 1 83
	14 23 56 36	3 26 14 20	13 72	-0 48	71 13 25 36	28 50	+ 3 14	16 1 38
	17 23 56 61	3 38 6 58	6 07	-0 51	70 32 2 88	59 20	-3 68	16 0 17
	18 23 56 83	3 42 5 26	4 69	-0 57	70 18 44 32	48 50	+ 4 18	16 0 6
	19 23 56 107	3 46 4 21	3 88	-0 33	71 6 1 91	57 90	-4 01	16 1 57
	20 23 56 141	3 50 4 15	3 61	-0 54	69 53 24 32	27 40	+ 3 08	16 0 35
	21 23 56 180	3 54 4 25	3 92	-0 33	69 41 18 19	17 50	-0 69	16 1 11
	22 23 56 22				69 29 26 66	28 40	+ 1 74	16 1 91
	23 23 56 27 0	4 2 6 64	6 17	-0 47	69 18 1 72	0 30	-1 42	16 2 39
	24 23 56 32 3	4 6 8 46	8 08	-0 38	69 6 48 6	53 60	+ 4 9	16 1 96
	25 23 56 38 2	4 10 11 01	10 51	-0 50	68 56 9 09	8 30	-0 79	16 1 23
	26 23 56 44 6	4 14 14 02	13 41	-0 61	68 15 41 72	44 90	+ 3 18	16 1 55
	30 23 57 14				68 7 5 24	53 60	-1 64	16 2 46
	31 23 57 22 5	4 34 34 80	34 60	-0 20	67 9 18 54	22 50	+ 3 96	16 2 59
June	1 23 57 31 5	4 38 40 37	40 07	-0 30	67 51 17 54	14 30	-3 24	16 2 23
	2 23 57 40 9	4 42 46 30	45 93	-0 37	67 43 27 03	29 20	+ 2 17	16 0 81
	3 23 57 50 5	4 46 52 57	52 15	-0 42	67 36 10 13	7 50	-2 63	16 2 48
	7 23 58 32 3	5 3 20 62	20 35	-0 27	67 10 33 28	36 50	+ 3 22	16 1 32
	8 23 58 43 4	5 7 28 48	28 16	-0 32	67 5 16 33	13 40	-2 93	16 1
	9 23 58 55				67 0 13 51	14 20	+ 0 69	
	11 23 59 18				66 51 32 04	28 60	-3 44	16 2 96
	12 23 59 30 5	5 24 1 95	1 91	-0 04	66 47 43 23	42 30	-0 93	16 2 35
	14 23 59 43 1	5 28 11 14	10 88	-0 26	66 44 23 56	20 40	-3 16	16 3 07
	18 0 0 34 1	5 44 48 42	48 29	-0 13	66 35 2 82	59 50	-3 32	16 0 06
	20 0 1 0				66 32 45 21	47 80	+ 2 59	16 1 74
	21 0 1 13				66 32 22 51	19 10	-3 41	15 59 94
	22 0 1 26				66 32 11 81	15 30	+ 3 49	15 59 37
	23 0 1 39				66 32 37 72	36 40	-1 32	
	24 0 1 52				66 33 19 94	22 20	+ 2 26	15 59 22
	25 0 2 5				66 34 37 57	32 90	-4 67	16 0 24
	26 0 2 18 5	6 18 5 57	5 14	-0 43	66 36 3 87	8 40	+ 4 53	16 0 32
	27 0 2 31 3	6 22 14 85	14 39	-0 46	66 38 11 01	8 60	-2 41	15 59 99
	28 0 2 43 6	6 26 23 75	23 49	-0 26	66 40 32 58	33 30	+ 0 72	16 1 29
July	1 0 3 19 6	6 38 49 65	49 45	-0 20	66 50 17 87	15 10	-2 77	16 1 78
	2 0 3 31 2	6 42 57 71	57 61	-0 10	66 54 15 47	17 80	+ 2 33	16 0 86
	3 0 3 42 2	6 47 5 43	5 58	+ 0 15	66 58 49 30	44 60	-4 70	16 0 26
	4 0 3 53				67 3 35 02	35 40	+ 0 38	16 0 54
	6 0 4 14 5	6 59 27 45	27 28	-0 17	67 14 26 48	28 90	+ 2 42	16 0 25
	7 0 4 24 4	7 3 33 97	33 87	-0 10	67 20 36 97	31 20	-5 77	16 2 63
	8 0 4 34 1	7 7 40 23	40 10	-0 13	67 26 53 52	57 00	+ 3 48	16 0 97
	9 0 4 43 4	7 11 46 16	45 96	-0 20	67 33 50 17	46 10	-4 07	16 0 75
	10 0 4 52 0	7 15 51 29	51 41	+ 0 12	67 40 56 70	58 50	+ 1 80	16 4 63
	11 0 5 0 5	7 19 56 43	56 47	+ 0 04	67 48 36 15	33 90	-2 25	16 2 25
	12 0 5 9 1	7 24 1 61	1 11	-0 50	67 56 28 65	32 30	+ 3 65	16 0 56
	13 0 5 16 8	7 28 5 78	5 31	-0 47	68 4 54 29	53 40	-0 89	16 1 06
	15 0 5 30				68 22 44 73	43 30	-1 43	16 1 12
	16 0 5 36				68 32 16 04	11 70	-4 34	16 1 42
	17 0 5 42				68 42 1 27	2 10	+ 0 83	15 59 43
	18 0 5 48				68 52 16 04	14 30	-1 74	16 0 48
	20 0 5 56				69 13 43 55	42 90	-0 65	16 0 65
	21 0 6 0				69 25 0 88	59 00	-1 88	16 1 63
	23 0 6 6 0	8 8 20 99	20 63	-0 36	69 48 36 17	33 30	-2 87	16 0 83
	24 0 6 8 1	8 12 19 79	19 17	-0 62	70 0 49 08	51 00	+ 1 92	16 0 36
	25 0 6 9 3	8 16 17 67	17 13	-0 54	70 13 27 33	28 80	+ 1 47	15 59 08
	26 0 6 9				70 26 29 34	26 20	-3 14	16 1 16

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (<i>C i t n u d</i>)											
M	S l a	Tim	f	A R fr m	A R fr m	Err o f N A	N P D fr m	N P D	Err	f N A	M
Ob rv ti	Ob rv ti	Ob rv ti	Ob rv ti	Ob rv ti	N A		Ob rv ti n.	fr m			H Semid
1838											
J ly	27	0	6 10 0	8 24 11 76	11 21	-0 55	70 39 41 28	43 20	+ 1 92		16 1 35
	29	0	6 9 6	8 32 3 3 J	2 83	-0 56	71 7 18 39	14 40	-3 99		15 58 45
	30	0	6 7 7	8 35 58 24	57 72	-0 52	71 21 30 03	28 10	-1 93		16 2 99
A g	2	0	5 5 8				72 5 59 62	57 70	-1 92		16 0 79
	3	0	5 54 6	8 51 31 50	31 07	-0 43					15 59 36
	4	0	5 49 7	8 55 23 17	22 86	-0 31	72 37 4 75	5 10	+ 0 35		16 2 23
	5	0	5 44				72 53 8 69	4 30	-4 39		15 50 23
	7	0	5 31 8	9 6 54 81	54 59	-0 22	73 25 51 64	52 20	+ 0 56		15 59 82
	9	0	5 17 3	9 14 33 46	32 88	-0 58	73 59 46 20	44 10	-2 10		16 0 32
	11	0	5 0 2	9 22 9 39	8 82	-0 57	74 34 34 86	38 30	+ 3 44		16 0 99
	13	0	4 40				75 10 33 22	32 20	-1 02		16 2 37
	14	0	4 30				75 28 46 74	50 70	+ 3 96		15 59 55
	15	0	4 19				75 47 24 10	23 30	-0 80		16 0 71
	16	0	4 7				76 6 6 26	9 50	+ 3 24		16 0 08
	19	0	3 30				77 3 47 24	47 30	+ 0 06		
	20	0	3 16				77 23 22 15	25 10	+ 2 95		
	25	0	2 2				79 4 29 53	27 80	-1 73		15 58 42
	27	0	1 29				79 46 11 75	7 40	-4 3		15 58 99
	29	0	0 55				80 28 28 35	25 80	-2 55		15 9 83
	30	0	0 37				80 49 48 87	48 60	-0 27		16 1 21
	31	0	0 18				81 11 23 85	20 10	-3 75		16 1 43
Sept	1	0	0 0				81 32 59 20	0 00	+ 0 80		16 1 68
	1	23	59 42				81 54 44 04	47 90	+ 3 86		16 1 89
	2	23	59 22 4	10 47 11 56	11 49	-0 07	82 16 46 64	43 10	-3 24		16 1 83
	3	23	59 3 3	10 50 48 95	48 63	-0 32					
	4	23	58 43				83 0 54 79	57 00	+ 2 21		16 0 35
	5	23	58 23 7	10 58 25 1	2 19	-0 32	83 23 17 04	14 20	-2 84		16 2 70
	6	23	58 3 9	11 1 39 04	38 63	-0 41	83 45 36 81	38 00	+ 1 19		16 0 55
	7	23	57 43				84 8 11 41	8 00	-3 41		15 59 61
	9	23	57 2				84 53 22 66	25 80	+ 3 14		15 59 75
	10	23	56 42 2	11 16 3 15	2 79	-0 36	85 16 14 22	12 90	-1 32		16 0 88
	11	23	56 21 4	11 19 38 92	38 52	-0 40					16 1 19
	14	23	55 18 2	11 30 25 17	25 26	+ 0 09	86 48 6 26	8 40	+ 2 14		
	25	23	51 29 3	12 9 57 82	57 60	-0 22	91 4 44 80	49 30	+ 4 50		1 59 90
	27	23	50 49 1	12 17 10 61	10 33	-0 28	91 51 44 11	39 70	-4 41		16 0 81
	28	23	50 29 3	12 20 47 29	47 00	-0 29	92 15 3 16	3 50	+ 0 34		16 1 16
	29	23	50 9 7	12 24 24 18	23 88	-0 30	92 38 29 66	26 10	-3 56		16 1 21
	30	23	49 50 3	12 28 1 27	1 00	-0 27	93 1 46 14	46 90	+ 0 76		16 0 33
O t	1	23	49 31 2	12 31 38 68	38 39	-0 29	93 25 9 07	5 70	-3 37		16 1 03
	2	23	49 12				93 48 19 39	22 20	+ 2 81		16 1 08
	4	23	48 35				94 34 49 87	47 10	-2 77		
	5	23	48 18 0	12 46 11 57	11 20	-0 37					15 59 98
	6	23	48 0 6	12 49 50 52	50 33	-0 19	95 21 58 80	58 80	0 00		16 2 23
	7	23	47 42 5	12 53 30 07	29 87	-0 20	95 44 1 62	58 90	-2 72		16 0 44
	8	23	47 26 9	12 57 10 18	9 85	-0 33	96 7 0 59	54 70	-5 89		16 0 85
	9	23	47 11 1	13 0 50 72	50 27	-0 45	96 29 44 14	45 80	+ 1 66		16 0 81
	10	23	46 55 7	13 4 31 80	31 19	-0 61	96 52 34 00	31 90	-2 10		16 0 32
	11	23	46 40 7	13 8 13 29	12 60	-0 69	97 15 13 19	12 60	-0 59		15 59 27
	12	23	46 26 0	13 11 55 13	54 51	-0 62	97 37 51 00	47 40	-3 60		16 1 08
	17	23	45 21				99 29 0 39	0 60	+ 0 21		15 58 51
	18	23	45 9 9	13 34 18 10	17 81	-0 29	99 50 52 95	52 30	-0 65		16 0 15
	19	23	44 59 6	13 38 4 31	3 79	-0 52	100 12 33 70	35 20	+ 1 50		16 0 28
	20	23	44 49 6	13 41 50 76	50 40	-0 36	100 34 9 81	9 00	-0 81		16 0 96
	21	23	44 40 3	13 45 38 06	37 70	-0 36	100 55 31 83	33 50	+ 1 67		1 59 08
	22	23	44 31 9	13 49 26 20	25 63	-0 57	101 16 50 14	48 00	-2 14		16 1 17
	23	23	44 23 9	13 53 14 74	14 23	-0 51	101 37 51 47	52 20	+ 0 73		15 59 84

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (*Continued*)

M	S	lar	T	im	f	A	R	from	A	R	from	Err	from	N	P	D	from	N	P	D	from	Err	from	M	an	
Ob	rv	ti				Ob	rv	ti	N	A	N	A	N	A	Ob	rv	i	n	N	A	N	A	N	A	H	Semid
1838																										
O t	24	23	44	16	5	13	57	392	3	50		—0.42		102	19	33	96	28	10		—5.86			16	1.72	
	25	23	44	9										103	59	57	92	59	20		+1.28			15	58.44	
	0	23	43	48																				16	0.08	
	31	23	43	46	3	14	24	927	8	74		—0.53														
N	1	23	43	45	5	14	28	466	3	97		—0.69		104	38	45	15	40	20		—4.95			15	59.11	
	2	23	43	45	1	14	32	054	0	03		—0.51		104	57	39	16	39	60		+0.44					
	7	23	43	53	3	14	51	5278	52	75		—0.03		106	28	51	90	49	90		—2.00					
	12	23	44	20	3	15	12	720	6	92		—0.28		107	53	34	3	5	60		+2.17			15	59.83	
	13	23	44	34	0	15	16	1256	12	35		—0.23		108	9	42	3	2	60		—1.63			16	0.01	
	15	23	44	54	5	15	24	2619	25	82		—0.37		108	39	56	20	58	60		+2.40			15	59.08	
	16	23	45	5										108	54	59	52	57	10		—2.42			16	0.77	
	17	23	45	18	1	15	32	4304	42	67		—0.37		109	9	34	65	35	30		+0.65					
	24	23	47	6	6	16	2	770	7	15		—0.55		110	42	32	8	2	10		—1.18			16	1.86	
	26	23	47	44										111	4	59	95	3	40		+3.45			16	2.52	
Dec	4	23	50	42	4	16	4	962	9	21		—0.41		112	20	53	93	50	00		—3.93			15	59.48	
	8	23	52	25	6	17	2	3937	39	04		—0.33		112	48	27	18	27	70		+0.52			16	1.92	
	9	23	52	52	6	17	7	299	2	70		—0.24		112	54	14	88	15	20		+0.32			16	1.65	
	12	23	54	16	5	17	20	1657	16	40		—0.17		113	8	52	21	54	30		+2.09			16	1.27	
	13	23	54	4	1	17	24	4195	41	69		—0.26		113	12	51	83	52	10		+0.27			16	0.96	
	14	23	55	14	3	17	29	773	7	27		—0.46		113	16	20	18	22	20		+2.02			16	0.35	
	15	23	55	43	4	17	33	3324	33	13		—0.11		113	19	24	07	24	40		+0.33			16	1.19	
	16	23	56	12	7	17	37	5943	59	21		—0.22		113	21	55	70	58	40		+2.70			16	0.88	
	17	23	56	42	2	17	42	2563	25	53		—0.10		113	24	72	8	4	60		—2.68			16	0.64	
	18	23	57	12	2	17	46	5225	51	99		—0.26		113	25	39	38	42	30		+2.92			16	0.55	
	19	23	57	42	0	17	51	1879	18	55		—0.24		113	26	53	34	51	80		1.54			16	1.81	
	20	23	58	11	9	17	55	4537	45	19		—0.18		113	27	33	91	33	00		—0.91			16	1.55	
	21	23	58	41	4	18	0	1211	11	86		—0.25		113	27	44	50	45	80		+1.30			16	1.48	
	22	23	59	12	4	18	4	3905	38	54		—0.51		113	27	32	49	30	20		—2.29			16	0.48	
	23	23	59	42										113	26	44	78	46	30		+1.52			16	1.12	
	25	0	0	12	3	18	13	3221	31	78		—0.43		113	25	33	06	34	10		+1.04			16	1.58	
	28	0	1	41	2	18	26	5112	50	83		—0.29												16	2.41	
	29	0	2	10	6	18	31	1720	16	84		—0.36												16	0.43	
1839																										
J n	2	0	4	5										112	59	35	7	5	50		+1.93			16	2.18	
	3	0	4	33	6	18	53	2343	22	98		—0.45		112	53	38	69	42	10		+3.41			16	1.43	
	5	0	5	28	7	19	2	1166	11	09		—0.57		112	41	31	19	33	50		+2.31			16	1.94	
	6	0	5	55	3	19	6	3497	34	53		—0.44		112	34	48	88	48	60		—0.28			16	0.94	
	7	0	6	21	7	19	10	5794	57	56		—0.38		112	27	36	11	37	00		+0.89			16	1.39	
	8	0	6	47	3	19	15	2015	20	09		—0.06		112	20	18	4	58	50		—3.34			16	1.57	
	9	0	7	13	1	19	19	4267	42	15		—0.62		112	11	48	85	53	70		+4.85			16	1.41	
	10	0	7	37	9	19	24	412	3	69		—0.43		112	3	22	76	22	90		+0.14			16	1.35	
	11	0	8	21		19	28	2500	24	70		—0.30		111	54	23	78	26	00		+2.22			16	2.83	
	14	0	9	11	9	19	41	2461	24	16		—0.45		111	25	71	5	2	50		—4.65			16	1.04	
	15	0	9	33										111	14	24	12	24	80		+0.68			16	0.24	
	16	0	9	55	3	19	50	124	0	59		—0.65		111	3	24	11	22	50		—1.61			16	0.65	
	17	0	10	15	6	19	54	1817	17	77		—0.40		110	51	53	58	56	10		+2.52			16	0.70	
	18	0	10	35	5	19	58	3467	34	23		—0.44		110	40	72	7	6	00		—1.27			16	1.37	
	19	0	10	54	3	20	2	5017	49	94		—0.23		110	27	51	05	52	30		+1.25			16	1.72	
	21	0	11	30	5	20	11	1955	19	11		—0.44		110	2	16	85	16	00		—0.85			16	0.83	
	22	0	11	47	4	20	15	3311	32	53		—0.58		109	48	50	79	54	10		+3.31			16	2.39	
	23	0	12	34		20	19	4570	45	15		—0.55		109	35	10	80	10	00		—0.80			15	59.92	
	25	0	12	33										109	6	34	59	37	50		+2.91					
	27	0	12	59	2	20	36	2786	27	53		—0.33		108	36	37	32	41	60		+4.28					
	28	0	13	11	3	20	40	3662	36	09		—0.53		108	21	11	39	13	20		+1.81			16	2.67	
	29	0	13	22	5	20	44	4428	43	81		—0.47		108	5	19	67	25	00		+5.33			16	2.81	
	30	0	13	32	9	20	48	5132	50	71		—0.61		107	49	17	38	17	60		+0.22			16	0.28	
	31	0	13	42	5	20	52	5748	56	79		—0.69		107	32	47	84	51	10		+3.26			16	1.41	

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (Continued)

M an S lar Tim f	A R from	A R. from	Err f N A	N P D from	N P D	E f N A	M
Ob rv tl	Ob rv tl	N A		Ob rv tl	f m N A		H S m d
1839							
Feb							
1 0 13 51.1	20 57 2.63	2.03	—0.60	107 16 5.54	6.00	+0.46	16 0.06
2 0 13 58.6	21 1 6.95	6.65	—0.30	106 59 0.37	2.60	+2.23	16 1.56
3 0 14 5.8	21 5 10.68	10.28	—0.40	106 41 41.42	41.40	—0.02	16 1.41
4 0 14 12.0	21 9 13.52	13.07	—0.45	106 23 57.66	2.70	+5.04	16 1.28
5 0 14 17.3	21 13 15.38	15.08	—0.30				15 59.30
6 0 14 22				105 47 53.88	54.30	+0.42	15 59.43
7 0 14 26				105 29 19.37	25.50	+6.13	15 59.61
8 0 14 29.0	21 25 16.53	16.17	—0.36	105 9 40.44	40.80	+0.36	15 59.37
9 0 14 31				104 51 37.99	40.70	+2.71	16 2.21
10 0 14 32				104 32 24.71	25.50	+0.79	16 2.10
11 0 14 33.5	21 37 10.9	10.36	—0.43	104 12 52.36	55.70	+3.34	16 2.18
12 0 14 33.7	21 41 7.22	6.89	—0.33	103 53 10.54	11.70	+1.16	16 2.48
13 0 14 32.9	21 45 2.94	2.64	—0.30	103 33 10.10	14.40	+4.30	16 1.76
14 0 14 31.1	21 48 57.83	57.64	—0.19	103 12 58.37	3.10	+4.73	16 0.98
15 0 14 29.0	21 52 52.22	51.87	—0.35	102 52 36.09	39.30	+3.21	
16 0 14 25.8	21 56 45.69	45.37	—0.32	102 32 0.50	3.10	+2.60	16 1.61
17 0 14 21.9	22 0 38.32	38.13	—0.19	102 11 12.63	14.90	+2.27	16 0.70
18 0 14 17.7	22 4 30.68	30.17	—0.51	101 50 14.53	15.10	+0.57	16 0.15
19 0 14 12.1	22 8 21.66	21.49	—0.17	101 29 1.05	4.20	+3.15	16 1.56
20 0 14 6.6	22 12 12.75	12.12	—0.63				15 59.75
21 0 13 59.5	22 16 2.68	2.06	—0.62	100 46 8.65	10.80	+2.15	16 1.32
22 0 13 52.1	22 19 51.25	51.32	+0.07	100 24 29.64	29.20	—0.44	16 0.68
23 0 13 44.7	22 23 40.53	39.91	—0.62	100 2 42.44	38.10	—4.34	15 57.82
24 0 13 36.1	22 27 28.34	27.88	—0.46	99 40 34.76	38.10	+3.34	16 3.05
25 0 13 26.5	22 31 15.30	15.25	—0.05	99 18 30.60	29.40	—1.20	16 1.11
26 0 13 17.3	22 35 2.65	1.98	—0.67	98 56 12.24	12.60	+0.36	16 0.30
27 0 13 7.0	22 38 48.94	48.13	—0.81	98 33 44.14	47.90	+3.76	16 1.15
28 0 12 55.7	22 42 34.08	33.72	—0.36	98 11 13.12	15.70	+2.58	16 1.19
Mar							
1 0 12 44.5	22 46 19.23	18.76	—0.47	97 48 30.97	36.50	+5.53	15 59.81
2 0 12 32.7	22 50 4.10	3.29	—0.81	97 25 48.83	50.40	+1.57	15 59.44
3 0 12 20.2	22 53 48.16	47.33	—0.83	97 2 54.18	58.00	+3.82	16 0.50
6 0 11 40				95 53 46.62	46.20	—0.42	16 0.59
7 0 11 25.8	23 8 39.82	38.94	—0.88	95 30 29.23	31.80	+2.57	16 0.12
8 0 11 11.2	23 12 21.66	20.82	—0.84	95 7 12.14	13.00	+0.86	16 0.83
9 0 10 56.1	23 16 3.06	2.32	—0.74	94 43 46.50	50.00	+3.50	15 59.90
10 0 10 40				94 20 24.56	23.20	—1.36	16 2.92
11 0 10 24.6	23 23 24.61	24.29	—0.32	93 56 56.54	53.00	—3.54	16 0.08
12 0 10 9.0	23 27 5.51	4.79	—0.72	93 33 17.42	19.90	+2.48	16 1.67
13 0 9 52.7	23 30 45.70	45.00	—0.70	93 9 40.13	44.30	+4.17	16 0.68
14 0 9 35.8	23 34 25.34	24.90	—0.44	92 46 4.61	6.40	+1.79	16 0.68
15 0 9 18.7	23 38 4.99	4.54	—0.45	92 22 22.81	26.80	+3.99	16 1.11
16 0 9 2.0	23 41 44.55	43.95	—0.60	91 58 44.84	45.90	+1.06	16 1.04
17 0 8 44.8	23 45 23.85	23.12	—0.73	91 34 57.37	3.90	+6.53	16 1.03
18 0 8 27.3	23 49 2.86	2.07	—0.79	91 10 18.71	21.30	+2.59	16 0.30
19 0 8 9				90 47 32.98	38.40	+5.42	16 0.81
20 0 7 51				90 23 53.64	55.90	+2.26	16 0.85
21 0 7 33				90 0 7.47	13.70	+6.23	16 1.15
22 0 7 15				89 36 30.24	32.50	+2.26	16 1.08
23 0 6 56.8	0 7 14.95	14.30	—0.65	89 12 47.08	52.70	+5.62	16 0.69
24 0 6 38.4	0 10 52.98	52.36	—0.62	88 49 12.40	14.60	+2.20	16 2.03
25 0 6 19.9	0 14 31.08	30.36	—0.72	88 25 32.72	38.40	+5.68	16 1.00
26 0 6 1.3	0 18 8.86	8.28	—0.58	88 2 3.88	4.60	+0.72	16 1.03
27 0 5 42.6	0 21 46.74	46.27	—0.47	87 38 27.97	33.60	+5.63	15 59.10
28 0 5 23.9	0 25 24.54	24.05	—0.49	87 15 3.34	5.50	+2.16	16 0.30
29 0 5 5.3	0 29 2.43	1.94	—0.49	86 51 35.91	40.90	+4.99	16 1.88
30 0 4 46.9	0 32 40.44	39.86	—0.58	86 28 20.32	19.80	—0.52	16 0.72
31 0 4 28.5	0 36 18.58	17.84	—0.74	86 5 1.40	2.60	+1.20	16 0.37

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (C n t n u d)

M an S lar Tim f	A R f m	A R f m	Err f N A.	N P D f m	N P D	E f N A	M
Ob rv t	Ob t	N A		Ob t	f m N A		H S mid
1839	m						
Apr 1 0 4 9				86 13 49 20	49 90	+ 0 70	15 58 02
2 0 3 51				85 18 39 51	41 80	+ 2 29	15 58 57
3 0 3 33 2	0 47 12 96	12 34	— 0 62	84 55 36 03	38 60	+ 2 57	16 0 35
4 0 3 15 3	0 50 51 45	50 78	— 0 67				16 0 56
5 0 2 57 2	0 54 29 94	29 41	— 0 53	84 9 45 17	48 10	+ 2 93	16 0 13
6 0 2 39 7	0 58 8 87	8 20	— 0 67	83 46 58 67	1 60	+ 2 93	16 0 79
7 0 2 21 9	1 1 47 63	47 22	— 0 41	83 24 18 05	21 40	+ 3 35	16 1 86
8 0 2 4 9	1 5 27 07	26 45	— 0 62	83 1 45 44	47 70	+ 2 26	16 0 61
9 0 1 47				82 39 18 76	21 10	+ 2 34	16 0 41
13 0 0 42				81 10 50 79	51 40	+ 0 61	15 58 60
14 0 0 27 1	1 27 28 21	27 41	— 0 80				16 0 11
15 0 0 11 6	1 31 9 21	8 65	— 0 56	80 27 25 68	27 90	+ 2 22	16 1 19
15 23 59 56 8	1 34 50 89	50 24	— 0 65	80 5 56 44	0 10	+ 3 66	16 0 70
16 23 59 42 0	1 38 32 79	32 17	— 0 62	79 44 41 33	42 20	+ 0 87	16 1 54
17 23 59 26 8	1 42 15 04	14 47	— 0 57	79 23 30 00	34 50	+ 4 50	15 58 80
18 23 59 13 5	1 45 57 56	57 13	— 0 43	79 2 35 33	37 40	+ 2 07	16 0 75
19 23 59 0 3	1 49 40 68	40 20	— 0 48	78 41 46 89	51 10	+ 4 21	15 59 56
22 23 58 22				77 40 40 37	41 20	+ 0 83	16 0 75
24 23 57 59 1	2 8 22 02	21 72	— 0 30	77 0 56 24	55 20	— 1 04	16 0 71
25 23 57 48 5	2 12 8 00	7 35	— 0 65	76 41 20 70	21 30	+ 0 60	16 0 56
27 23 57 26 1	2 19 40 62	40 09	— 0 53	76 2 51 76	53 10	+ 1 34	16 3 52
28 23 57 18				75 44 0 42	59 40	— 1 02	16 0 21
29 23 57 9				75 25 16 91	19 70	+ 2 79	16 1 30
30 23 57 14	2 31 3 50	3 05	— 0 45	75 6 53 79	54 20	+ 0 41	16 1 26
M y 1 23 56 53 7	2 34 52 25	51 79	— 0 46	74 48 39 51	43 30	+ 3 79	16 2 12
2 23 56 46 4	2 38 41 55	41 07	— 0 48	74 30 47 66	47 40	— 0 26	16 0 56
3 23 56 40 0	2 42 31 71	30 93	— 0 78	74 13 4 48	6 60	+ 2 12	16 0 70
4 23 56 33				73 55 40 24	41 30	+ 1 06	16 2 19
5 23 56 28				73 38 27 87	31 80	+ 3 93	16 1 15
6 23 56 23 3	2 54 4 64	3 92	— 0 72	73 21 35 26	38 50	+ 3 24	16 2 48
7 23 56 18 6	2 57 56 50	56 08	— 0 42	73 5 3 50	1 60	— 1 90	16 1 96
8 23 56 14 7	3 1 49 11	48 84	— 0 27	72 48 36 78	41 60	+ 4 82	16 1 56
9 23 56 11 7	3 5 42 55	42 19	— 0 36	72 32 38 06	38 70	+ 0 64	16 1 15
10 23 56 9 0	3 9 36 56	36 12	— 0 44	72 16 50 80	53 20	+ 2 40	16 1 47
11 23 56 7 2	3 13 31 29	30 64	— 0 65	72 1 21 79	25 40	+ 3 61	16 1 65
12 23 56 5				71 46 18 10	15 70	— 2 40	16 0 24
15 23 56 5 0	3 29 15 18	14 56	— 0 62	71 2 34 21	37 70	+ 3 49	
16 23 56 5 7	3 33 12 45	11 96	— 0 49	70 48 43 26	43 20	— 0 06	16 1 81
17 23 56 7				70 35 6 41	8 20	+ 1 79	
18 23 56 8				70 21 50 74	53 00	+ 2 26	16 1 61
19 23 56 11				70 8 56 00	57 80	+ 1 80	16 1 08
20 23 56 14 2	3 49 7 34	7 01	— 0 33	69 56 21 96	23 00	— 1 96	16 1 23
21 23 56 17 9	3 53 7 60	7 08	— 0 52	69 44 4 38	8 80	+ 4 42	16 1 88
2 23 56 22 0	3 57 8 22	7 67	— 0 55	69 32 16 86	15 40	— 1 46	16 0 37
23 23 56 26 6	4 1 9 41	8 77	— 0 64	69 20 39 58	42 90	+ 3 32	16 1 48
24 23 56 31 3	4 5 10 61	10 40	— 0 21				16 1 96
29 23 57 4				68 18 57 99	1 80	+ 3 81	16 0 54
June 12 23 59 28 8	5 23 3 15	2 99	— 0 16	66 48 36 83	33 40	— 3 43	16 1 17
13 23 59 41 3	5 27 12 30	12 04	— 0 26	66 45 2 93	5 80	+ 2 87	16 1 41
14 23 59 54				66 42 4 42	2 90	— 1 52	16 0 12
16 0 0 6				66 35 22 72	24 70	+ 1 98	16 0 56
18 0 0 32				66 35 23 35	22 40	— 0 95	16 1 55
19 0 0 45				66 33 59 08	58 40	— 0 68	16 0 70
20 0 0 58 0	5 52 8 49	8 57	+ 0 08	66 32 57 69	59 30	+ 1 61	16 1 88
21 0 1 11 0	5 56 18 12	18 12	0 00	66 32 22 66	25 00	+ 2 34	16 0 28
22 0 1 24 4	6 0 28 14	27 65	— 0 49	66 31 14 40	15 50	+ 1 10	16 0 48
23 0 1 37 0	6 4 37 32	37 15	— 0 17	66 32 32 34	30 60	— 1 74	16 2 10

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (Continued)

M S I Tim f	A R f m	A R f m	E f N A	N I D f m	N P D	E f N A	M an
Ob rv th	Ob t	N A		Ob	f m N A		II S mid
1839							
Oct							
1 23 49 35				93 42 18 41	22 0	+ 3 89	16 0 63
3 23 48 57 5	12 38 1 07	0 89	— 0 18	94 5 51 64	56 00	+ 4 36	16 1 35
4 23 48 39 5	12 41 39 59	39 29	— 0 30	94 29 7 35	8 90	+ 1 55	16 1 79
5 23 48 21 9	12 45 18 55	18 07	— 0 48	94 52 17 13	18 60	+ 1 17	16 0 97
6 23 48 4 3	12 48 57 49	57 25	— 0 24	95 14 27 61	24 60	— 3 01	16 1 92
7 23 47 47				95 37 25 63	6 80	+ 1 17	16 1 74
8 3 47 31				96 1 22 03	24 50	+ 2 47	
9 23 47 15 0	12 59 57 65	57 22	— 0 43	96 24 20 49	17 40	— 3 09	16 0 59
12 23 46 29				97 32 23 60	23 80	+ 0 20	
13 23 46 15				97 51 1 69	53 70	+ 2 01	16 0 41
14 23 46 1 5	13 18 26 79	26 44	— 0 35	98 17 13 07	17 00	+ 3 93	16 0 92
15 23 45 48 2	13 22 10 06	9 82	— 0 24	98 39 29 89	33 20	+ 3 31	16 0 28
17 23 45 23 8	13 29 38 66	38 22	— 0 44	99 23 42 26	42 50	+ 0 24	16 1 45
18 23 45 12				99 45 32 18	35 20	+ 3 02	16 0 2
20 23 44 51 4	13 40 55 75	55 27	— 0 48	100 28 54 97	54 10	— 0 87	16 0 08
22 23 44 32 7	13 48 30 13	9 83	— 0 30	101 11 34 57	35 70	+ 1 13	15 59 75
2 23 44 10 1	13 59 57 08	56 88	— 0 20	102 14 21 67	21 90	+ 0 23	16 0 73
26 23 44 3 8	14 3 47 37	47 36	— 0 01				16 1 15
27 23 43 58 9	14 6 38 95	38 59	— 0 36				16 1 11
Nov							
13 23 44 1 8	15 15 13 48	13 55	+ 0 07				15 59 16
15 23 44 52 1	15 23 26 86	26 40	— 0 46	108 36 18 57	18 0	— 0 07	16 0 83
17 23 44 14 5	15 31 42 49	42 56	+ 0 07	109 6 4 74	3 50	— 1 24	16 2 63
18 23 45 27 6	15 3 52 14	1 88	— 0 26	109 20 29 6	25 30	— 4 26	16 1 88
19 23 45 40 8	1 40 1 94	2 00	+ 0 06	109 34 24 19	26 20	+ 2 01	
20 23 45 55				109 48 4 84	5 70	+ 0 86	
21 23 46 10 3	1 48 24 65	24 72	+ 0 07	110 1 22 92	23 70	+ 0 78	
22 23 46 26 4	15 52 37 23	37 28	+ 0 05	110 14 24 02	19 80	— 4 22	15 57 91
23 23 46 43 1	15 56 50 68	50 64	— 0 04	110 26 1 85	54 60	+ 2 71	16 2 4
24 23 47 1				110 39 6 86	4 70	— 2 16	
25 23 47 19 0	16 5 19 77	19 72	— 0 05	110 1 58 4	2 90	— 5 55	
26 23 47 38 3	16 9 35 65	35 41	— 0 24	111 2 11 70	17 70	+ 6 00	16 2 30
27 23 47 58 4	16 13 52 40	51 86	— 0 54	111 13 20 30	18 90	— 1 40	
28 23 48 19 0	16 18 9 54	9 03	— 0 51				16 1 16
29 23 48 40				111 34 12 72	8 80	— 3 92	
Dec							
1 23 49 24 6	16 31 4 93	4 78	— 0 15				16 0 48
2 23 49 48 0	16 35 25 02	24 71	— 0 31				
6 23 51 27 1	16 52 50 54	50 37	— 0 17				
7 23 51 53 2	16 57 13 35	13 13	— 0 22				16 1 59
8 23 52 19 9	17 1 36 73	36 39	— 0 34				16 2 39
11 23 53 4 6	17 14 49 22	48 66	— 0 56				16 1 90
17 23 56 35 7	17 41 2 12	21 67	— 0 45				16 0 21
18 23 57 5 2	17 45 48 30	47 92	— 0 38				16 1 30
19 23 57 34 9	17 50 14 70	14 31	— 0 39				16 2 72
22 23 59 4 7	18 3 34 52	33 93	— 0 59				16 1 10
23 23 59 34 5	18 8 0 87	0 53	— 0 34				16 0 43
26 0 0 34 6	18 16 54 19	53 61	— 0 58				16 0 72
27 0 1 4 4	18 21 20 54	20 06	— 0 48				16 1 30
28 0 1 33 7	18 25 46 57	46 39	— 0 18				16 1 63
29 0 2 3 6	18 30 13 04	12 55	— 0 49				16 1 01
30 0 2 32 6	18 34 38 74	38 54	— 0 20				
31 0 3 1 9	18 39 4 70	4 31	— 0 39				16 3 41
1840							
Jan							
2 0 3 59 4	18 47 55 48	55 09	— 0 39				16 1 96
3 0 4 27 8	18 52 20 51	20 01	— 0 50				16 1 32
4 0 4 55 7	18 56 45 08	44 57	— 0 51				16 1 92
6 0 5 50 3	19 5 32 92	32 42	— 0 50				16 2 55
7 0 6 16 7	19 9 55 87	55 56	— 0 31				16 1 30

The observation was suspended from 1st December 1839 to 12th January 1840 during an Examinations of the Dvina

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER, (C n t u d)

M	S	T	f	A. R. f m	A. R. f m	E r r	f N A	N P D f m	N P D	E r r	f N A.	M a n
Obsrv tl				Ob rv tl	N A.			Ob rv tl	f m			H Semid
1840			m					/	/	"		
J	8	0	6 42 7	19 14 18 67	18 44	—	0 23					16 3 35
	9	0	7 8 3	19 18 40 86	40 67	—	0 19					16 0 81
	11	0	7 57 9	19 27 23 75	23 49	—	0 26					
	12	0	8 22					111 47 11 99	15 70	+	3 71	16 1 12
	14	0	9 7 8	19 40 23 50	23 11	—	0 39					16 2 56
	15	0	9 29 8	19 44 42 10	41 71	—	0 39					16 0 90
	16	0	9 51 1	19 49 0 03	59 61	—	0 42	111 5 54 69	59 10	+	4 41	16 1 47
	17	0	10 11 5	19 53 17 03	16 81	—	0 22	110 54 36 77	39 00	+	2 23	16 0 25
	18	0	10 31 6	19 57 33 85	33 29	—	0 56	110 42 53 86	54 90	+	1 04	16 1 72
	19	0	10 50					110 30 44 09	47 40	+	3 31	16 2 66
	20	0	11 9					110 18 12 48	16 70	+	4 22	16 0 94
	22	0	11 43 7	20 14 32 46	31 90	—	0 56	109 52 9 12	7 10	—	2 07	16 0 48
	23	0	11 59					109 38 30 76	28 90	—	1 86	
	24	0	12 15 4	20 22 57 18	56 67	—	0 51	109 24 26 78	28 70	+	1 92	16 1 67
	25	0	12 29 9	20 27 8 33	7 89	—	0 41	109 10 6 92	7 00	+	0 08	16 1 38
	26	0	12 43 8	20 31 18 82	18 33	—	0 49	108 55 22 20	24 20	+	2 00	16 1 70
	27	0	12 56 9	20 35 28 49	27 99	—	0 57	108 40 19 98	20 50	+	0 52	16 1 30
	29	0	13 20 7	20 43 45 53	44 93	—	0 60	108 9 9 21	12 50		3 29	16 1 36
	30	0	13 31 5	20 47 52 88	52 19	—	0 69	107 53 6 64	8 80	+	2 16	16 2 41
	31	0	13 41 2	20 51 59 09	58 63	—	0 46	107 36 42 22	45 80	+	3 58	16 4 23
Feb	1	0	13 50					107 20 3 06	4 10	+	1 04	16 2 3
	2	0	13 58 3	21 0 9 33	9 08	—	0 25	107 3 2 56	4 00	+	1 44	16 2 35
	3	0	14 5 8	21 4 13 54	13 09	—	0 45	106 45 44 51	45 90	+	1 39	16 1 95
	4	0	14 12					106 28 8 24	10 40	+	2 16	16 1 92
	5	0	14 18 3	21 12 19 21	18 57	—	0 64	106 10 17 69	17 70	+	0 01	16 1 72
	6	0	14 23 1	21 16 20 56	20 05	—	0 51	105 52 6 75	8 40	+	1 65	16 2 47
	7	0	14 27 2	21 20 21 29	20 73	—	0 56	105 33 41 39	42 90	+	1 51	16 0 79
	8	0	14 30 7	21 24 21 28	20 58	—	0 70	105 15 1 70	1 60	—	0 10	16 2 73
	9	0	14 33									16 0 76
	10	0	14 34 5	21 32 18 19	17 82	—	0 37					16 1 99
	11	0	14 35 5	21 36 15 73	15 24	—	0 49	104 17 26 38	27 00	+	0 62	16 1 10
	12	0	14 36					103 57 47 98	46 70	—	1 28	16 2 12
	13	0	14 35 0	21 44 8 10	7 66	—	0 44	103 37 49 95	52 80	+	2 85	16 1 01
	14	0	14 33 4	21 48 3 09	2 73	—	0 36	103 17 45 37	45 70	+	0 33	16 0 52
	15	0	14 31 2	21 51 57 49	57 02	—	0 47	102 57 23 49	25 60	+	2 11	16 1 23
	16	0	14 27 7	21 55 50 56	50 55	—	0 01	102 36 51 89	53 40	+	1 51	
	17	0	14 24 4	21 59 43 86	43 36	—	0 50	102 16 7 18	9 00	+	1 82	16 1 90
	18	0	14 19 9	22 3 35 91	35 42	—	0 49	101 55 10 55	13 00	+	2 45	16 1 50
	19	0	14 14 7	22 7 27 31	26 79	—	0 52	101 31 7 86	5 60	—	2 26	16 1 90
	20	0	14 8 9	22 11 18 13	17 48	—	0 65	101 12 47 40	47 40		0 00	16 1 85
	21	0	14 2 4	22 15 8 13	7 51	—	0 62	100 51 13 14	18 60	+	5 46	16 1 83
	22	0	13 55 2	22 18 57 37	56 88	—	0 49	100 29 39 44	39 70	+	0 26	16 0 68
	23	0	13 47 4	22 22 46 16	45 63	—	0 53	100 7 49 92	51 00	+	1 08	16 1 15
	24	0	13 39 0	22 26 34 27	33 79	—	0 48	99 45 56 32	52 90	—	3 42	16 2 01
	25	0	13 30 0	22 30 21 87	21 33	—	0 54	99 23 43 59	46 00	+	2 41	16 1 70
	26	0	13 20 6	22 34 9 06	8 30	—	0 76					16 1 35
	27	0	13 10 4	22 37 55 37	54 72	—	0 65	98 39 5 43	6 70	+	1 27	16 0 95
	28	0	12 59 8	22 41 41 19	40 57	—	0 62	98 16 29 76	35 30	+	5 54	16 1 12
	29	0	12 48 5	22 45 26 40	25 91	—	0 49	97 53 55 24	56 40	+	1 16	16 1 81
Mar	1	0	12 36 6	22 49 10 98	10 72	—	0 26	97 31 6 79	10 70	+	3 91	16 1 59
	2	0	12 24 5	22 52 55 48	55 05	—	0 43	97 8 18 66	18 40	—	0 26	15 59 70
	3	0	12 12					96 45 18 92	20 10	+	1 18	15 59 88
	4	0	11 58 5	23 0 22 53	22 23	—	0 30	96 22 14 74	16 30	+	1 56	
	5	0	11 45					95 59 7 43	7 10	—	0 33	16 0 76
	6	0	11 31 0	23 7 48 06	47 59	—	0 47	95 35 53 27	53 10	—	0 17	16 2 00
	7	0	11 16 5	23 11 30 13	29 62	—	0 51	95 12 35 46	34 70	—	0 76	16 0 92
	8	0	11 16	23 15 11 65	11 25	—	0 40	94 49 12 97	12 30	—	0 67	16 1 75

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN CENTER (Continued)

M	S	T	f	A	R	f	m	A	R	f	m	N	P	D	f	m	N	P	D	f	m	E	f	N	A	M	H	S	m	i	d
Ob	t			Ob	t			N	A			Ob	r	v	t		N	A													
1840																															
Mar	9	0	10	46	1	23	18	52	73	52	49	—0	24													16	1	92			
	10	0	10	30	9	23	22	33	99	33	37	—0	62													16	1	50			
	11	0	10	14	9	23	26	14	51	13	90	—0	61													16	0	70			
	12	0	9	58	6	23	29	54	71	54	11	—0	60													16	2	56			
	13	0	9	42	0	23	33	34	59	33	99	—0	60													16	1	23			
	14	0	9	25																						16	0	19			
	15	0	9	7	4	23	40	53	01	52	92	—0	09													16	2	48			
	16	0	8	50	3	23	44	32	55	32	00	—0	55													16	0	15			
	17	0	8	32	6	23	48	11	28	10	87	—0	41													16	0	46			
	18	0	8	14	9	23	51	50	01	49	54	—0	47													16	0	85			
	19	0	7	56	9	23	55	28	52	28	01	—0	51													16	0	12			
	20	0	7	38	6	23	59	6	79	6	35	—0	44													16	1	36			
	21	0	7	20	5	0	2	45	11	44	57	—0	54													16	1	01			
	22	0	7	2	2	0	6	23	25	22	69	—0	56													16	0	06			
	23	0	6	13	6	0	10	1	30	0	76	—0	54													16	0	83			
	24	0	6	25	1	0	13	39	29	38	75	—0	54													16	1	23			
	25	0	6	6	6	0	17	17	22	16	73	—0	49													16	0	28			
	26	0	5	48	1	0	20	55	25	54	68	—0	57													16	5	98			
	27	0	5	29	5	0	24	33	17	32	65	—0	52													16	1	83			
	28	0	5	11	0	0	28	11	18	10	65	—0	53													16	0	30			
	29	0	4	52	4	0	31	49	11	48	69	—0	12													16	1	98			
	30																														

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (C. t. d.)

M	S	Tim	f	A R f	A R f m	Err	f N A	N P D f m	N P D	E	f N A	M		
Ob	rv			Ob	u		N A	Ob	rv	l	f m	N A	II	S m d
1840			m											
M y	15	23	56	66	3 32	16 32	1 8 ^o	—0 50	70 52	2 51	1 00	—1 51	16	1 8
	18	23	56	11 1	3 44	10 55	10 48	—0 07	70 12	0 2 ^o	2 90	+ 2 68	16	1 9
	19	23	56	13 9	3 48	9 92	J 81	—0 11	69 59	25 75	23 40	—2 35	16	2 3
	20	23	56	17					69 47	1 88	4 10	+ 2 22	16	10
	21	23	56	21					69 35	8 16	5 50	—2 66	16	0 23
	22	23	56	25 5	4 0	11 19	11 18	—0 01	69 23	27 29	27 70	+ 0 41	16	1 30
	23	23	56	30 4	4 4	12 77	12 73	—0 04	69 12	9 58	11 00	+ 1 42	16	1 83
	24	23	56	35 8	4 8	14 75	14 81	+ 0 06	69 1	13 24	15 60	+ 2 36	16	98
	25	23	56	42 0	4 12	17 42	17 40	—0 02	68 50	39 84	41 90	+ 2 06	16	3 1
	26	23	56	48 4	4 16	20 39	20 51	+ 0 12	68 40	26 02	30 00	+ 3 98	16	3 13
	27	23	56	J 6					68 30	41 03	40 10	—0 93	16	0 J
	28	23	57	3 3	4 24	28 47	28 17	—0 30	68 21	12 14	12 60	+ 0 46	16	1 23
	29	23	57	11 3	4 28	32 99	32 70	—0 29	68 12	9 83	7 70	—2 13	16	1 37
	30	23	57	19					68 3	20 92	25 30	+ 1 38	16	1 30
	31	23	57	28					67 55	7 86	5 80	—2 06	15	J 8 73
J	1	23	57	38 0	4 40	49 41	48 88	—0 53	67 47	7 74	9 40	+ 1 66	16	0 90
	2	23	57	47					67 39	35 42	36 30	+ 0 88	16	0 81
	3	23	57	7 0	4 19	1 68	1 58	—0 10	67 32	21 98	26 60	+ 4 62	16	0 50
	5	23	58	18 0	4 57	15 85	15 62	—0 23	67 19	17 66	18 10	+ 0 44	16	1 96
	6	23	58	29 0	5 1	23 36	23 09	—0 27	67 13	19 91	19 60	—0 31	16	2 88
	7	23	58	40					67 7	43 72	45 00	+ 1 28	16	1 41
	8	23	58	51					67 2	36 55	34 50	—2 05	1	59 26
	9	23	59	3					66 57	47 25	48 30	+ 1 05	16	1 0
	10	23	59	15					66 53	23 01	26 10	+ 3 39	16	0 1
	18	0	0	42					66 34	15 53	18 0	+ 2 97	16	1 23
	20	0	1	8					66 32	34 03	32 50	—1 53	16	1 3
	22	0	1	34					66 32	25 20	25 60	+ 0 40	16	1 08
	23	0	1	47					66 32	58 37	59 60	+ 1 23	16	10
	24	0	1	59 7	6 11	56 16	56 02	—0 14	66 33	6 76	58 40	+ 1 64	16	1 23
	25	0	2	12					66 35	20 43	21 80	+ 1 37	16	0 08
	26	0	2	25					66 37	11 61	10 00	—1 61	16	2 23
	27	0	2	37 9	6 24	24 14	23 88	—0 26	66 39	22 31	23 00	+ 0 69	16	3 0
	28	0	2	50					66 42	0 03	0 50	+ 0 47	16	1 27
	30	0	3	14					66 48	29 47	29 40	—0 07	16	1 00
July	2	0	3	37 4	6 45	6 73	6 90	+ 0 17	66 56	37 10	3 80	—1 30	16	1 13
	3	0	3	49 3	6 49	15 16	14 73	—0 43	67 1	12 48	15 20	+ 2 72	16	1 1
	4	0	4	0					67 6	22 80	18 80	—4 00	16	0 83
	6	0	4	21					67 17	38 00	37 50	—0 50	16	1 16
	8	0	4	40					67 30	27 76	30 70	+ 2 94	16	1 10
	14	0	5	28					68 18	23 94	22 80	—1 14	15	59 2
	16	0	5	40					68 37	22 03	19 70	—2 33	15	59 17
	17	0	5	45					68 47	18 25	20 90	+ 2 65	16	4 11
	18	0	5	50					68 57	46 12	43 70	—2 42	16	0 10
	19	0	5	55					69 8	23 58	27 90	+ 4 32	16	0 3
	21	0	6	2					69 30	59 34	9 50	+ 0 16	16	1 68
	23	0	6	7					69 54	57 33	54 20	—3 13	16	0 83
	24	0	6	8					70 7	21 93	21 90	—0 03	1	59 J 2
	26	0	6	10					70 33	19 41	17 30	—2 11	16	0 9
	27	0	6	9					70 46	44 18	44 20	+ 0 02	15	57 66
	28	0	6	9 1	8 0	9 46	9 02	—0 44	71 0	35 23	30 20	—5 03	16	0 2
	29	0	6	7					71 14	32 68	35 00	+ 2 32	16	0 1
	30	0	6	6					71 28	59 88	58 40	—1 48	16	0 41
	31	0	6	J					71 43	38 55	40 10	+ 1 55	16	0 9
Aug	1	0	6	0					71 58	43 09	39 70	—3 39	16	1 16
	2	0	5	56					72 13	54 46	56 90	+ 2 44	16	1 12
	5	0	5	41					3 1	8 63	31 30	+ 2 67	16	1 55

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (Continued)

M Ob	S ar T m f i	A R f m Ob	A R f m N A	E f N A	N P D f m Ob rv	N P D f N A	E f N A	M H s id
1810								
A b	9 0 5 13				74 8 4 37	45 10	+ 0 03	16 0 3
	10 0 5 48	9 20 20 07	19 50	— 0 57	74 26 14 27	12 50	— 1 77	16 0 01
	13 0 4 35				75 19 58 8	2 30	+ 3 45	16 1 36
	14 0 4 24				75 38 30 17	27 10	— 3 07	16 0 92
	15 0 4 13				75 7 1 23	6 30	+ 5 07	16 1 90
	19 0 3 22				77 13 54 18	53 10	— 1 8	1 58 61
	20 0 3 8				77 33 34 82	30 30	+ 1 48	16 0
	21 0 2 54				77 3 30 17	31 60	+ 1 43	15 59 91
	2 0 2 39				78 13 34 84	38 50	+ 3 61	16 0 73
	23 0 2 24				78 33 9 31	6 70	— 2 61	16 0 39
	24 0 2 8				78 54 22 09	25 90	+ 3 81	16 1 06
	25 0 1 52				79 15 7 40	70	— 1 70	1 9 36
	27 0 1 19				79 6 54 04	56 00	+ 1 96	
	28 0 1 2				80 18 10 4	5 80	— 4 54	1 9 26
	29 0 0 44				80 39 21 61	24 70	+ 0 06	15 9 08
S pt	4 23 8 32 9	10 56 1 67	17 43	— 0 24	83 12 31 49	28 70	— 2 79	16 2 01
	23 58 13				83 34 46 51	45 40	+ 86	16 0 48
	6 23 57 53				83 57 19 17	16 60	— 2 7	16 1 2
	7 23 57 32				84 19 47 99	49 40	+ 1 41	16 0 46
	11 23 6 9				85 0 56 40	54 90	— 1 50	16 41
	13 23 27				86 36 55 61	55 20	— 0 44	15 10 8
	14 23 5 6				87 0 2 35	1 30	— 1 05	1 5 40
	15 23 1 4				87 23 8 11	11 00	+ 2 84	
	16 23 51 24				87 46 21 08	23 80	— 0 28	1 58 88
	20 23 3 0				89 19 40 21	40 60	+ 0 39	16 0 8
	21 23 52 39				89 43 3 92	4 40	+ 0 48	1 8
	3 23 51 57 9	12 4 36 00	35 71	— 0 29	90 29 6 20	5 10	— 1 10	15 8 38
	2 23 51 17				91 16 42 98	47 30	+ 4 32	15 59
	26 23 50 57				91 10 13 12	13 00	— 0 1	16 1 58
	27 23 50 37				92 3 35 01	38 00	+ 2 99	1 38 8
	28 23 50 17 7	12 22 38 28	37 98	— 0 30	92 27 2 57	2 00	— 0 57	16 0 21
	29 23 49 58	12 26 15 54	15 10	— 0 41	92 0 22 1	24 60	+ 2 06	15 58 61
O t	1 23 49 20 6	12 33 30 70	30 17	— 0 53	93 37 2 23	3 70	+ 1 17	16 0 44
	2 23 49 2 0	12 37 8 56	8 12	— 0 41	94 0 18 01	15 00	+ 1 9	16 0
	23 48 8 4	12 48 4 40	3 93	— 0 47	9 9 49 86	48 20	— 1 66	16 0 43
	7 23 47 34 1	12 55 23 22	23 05	— 0 17				16 0 59
	8 23 47 18 1	12 59 3 73	3 20	— 0 53	96 18 38 91	40 70	+ 1 79	15 9 88
	9 23 47 2 2	13 2 44 36	43 81	— 0 55	96 11 29 19	28 70	— 0 49	16 1 11
	10 23 46 46				97 4 7 16	11 20	+ 4 04	16 1 88
	11 23 46 31				97 26 48 43	48 10	— 0 33	16 0 46
	12 23 46 17 2	13 13 48 89	48 56	— 0 33	97 49 16 46	15 90	+ 2 41	1 9 97
	14 23 46 50				98 34 1 24	1 00	— 0 24	15 9 10
	15 23 4 37				98 56 9 26	11 50	+ 2 24	15 59 06
	16 23 45 25 0	13 28 42 77	42 43	— 0 34	99 18 13 77	14 10	+ 0 63	16 0 61
	17 23 45 13 3	13 32 27 62	27 40	— 0 22	99 40 9 88	9 40	— 0 18	16 1 57
	18 23 45 2 6	13 36 13 35	12 59	— 0 36	100 1 9 01	56 20	— 2 81	16 0 5
	19 23 41 52 3	13 39 59 56	59 24	— 0 32	100 23 35 06	34 30	— 0 76	16 0 76
	20 23 44 12 7	13 43 46 48	46 16	— 0 32	100 45 7 66	3 30	— 4 36	16 0 22
	21 23 44 33 9	13 47 34 8	33 73	— 0 55	101 6 23 01	22 70	— 0 31	16 1 8
	29 23 43 48				103 50 25 31	21 0	— 0 81	16 0 10
	30 23 43 45				104 9 54 21	59 10	+ 4 89	16 0 5
	31 23 43 44				104 29 18 0	20 10	+ 2 08	16 0 5
No	1 23 43 43				104 48 29 34	27 00	— 2 34	16 1 11
	3 23 43 44				105 25 54 21	56 60	+ 2 39	16 0 21
	14 23 44 47				108 32 29 62	30 20	+ 0 8	1 59 99
	16 23 45 10				109 2 22 49	26 10	+ 3 61	16 0 26

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN CENTER (C *inued*)

Man S i Tim f Ob rv i	A R f m O l rv ti	A R fr m N A	Err f N A	N P D fr m Ob ti	N P D fr m N A	Err f N A	Man H S m d
1840							
N 18 23 45 36				109 30 58 83	0 30	+ 1 47	16 0 99
19 23 45 51				109 44 50 35	45 80	- 4 55	16 1 03
20 23 46 6				109 58 10 12	9 70	- 0 42	16 0 70
21 23 46 21				110 11 16 59	11 80	- 4 79	16 3 40
22 23 46 38 7	15 55 49 28	48 73	- 0 55	110 23 49 73	51 50	+ 1 77	16 0 30
23 23 46 56 3	16 0 3 28	2 88	- 0 40	110 36 11 67	8 50	- 3 17	15 59 12
25 23 47 33				110 59 32 63	33 30	+ 0 67	
Dec 2 23 50 6				112 8 47 60	46 60	- 1 00	16 0 83
3 23 50 30 6	16 43 3 75	3 11	- 0 64	112 16 59 57	59 00	- 0 7	16 2 81
4 23 50 55				112 24 43 49	45 60	+ 2 11	16 0 12
5 23 51 20				112 32 9 19	5 90	- 3 29	15 58 70
8 23 52 39				112 51 22 85	27 20	+ 4 35	15 59 37
9 23 53 6				112 57 0 97	0 60	- 0 37	15 59 48
11 23 54 2				113 6 41 59	45 60	+ 4 01	16 0 01
12 23 54 30				113 10 58 76	56 90	- 1 86	16 0 06
13 23 54 59				113 14 37 60	40 50	+ 2 90	16 1 17
14 23 55 28				113 17 59 46	56 40	- 3 06	16 1 10
15 23 55 57 8	17 35 50 66	49 99	- 0 67	113 20 42 16	44 10	+ 1 94	16 1 76
16 23 56 27 1	17 40 16 52	16 13	- 0 39	113 23 4 19	3 80	- 0 39	16 0 88
17 23 56 56 9	17 44 43 00	42 46	- 0 54	113 24 51 08	55 30	+ 4 22	16 0 92
20 23 58 26				113 27 44 12	40 20	- 3 92	16 0 85
21 23 58 56				113 27 36 64	38 50	+ 1 86	16 0 61
22 23 59 27				113 27 11 58	8 30	- 3 28	16 1 03
1841							
J 2 0 4 21 0	18 51 16 74	16 26	- 0 48	112 56 14 40	17 20	+ 2 80	16 1 03
3 0 4 48 4	18 55 40 76	40 76	0 00	112 50 39 19	39 20	+ 0 01	16 2 30
4 0 5 16 5	19 0 5 46	4 84	- 0 62	112 44 34 76	34 10	- 0 66	16 1 69
5 0 5 43 5	19 4 29 10	28 51	- 0 59	112 38 1 68	1 90	+ 0 22	16 0 79
6 0 6 10 0	19 8 52 24	51 72	- 0 52	112 31 6 09	3 00	- 3 09	16 0 12
9 0 7 26				112 7 23 95	27 30	+ 3 35	16 2 23
10 0 7 51				111 58 45 55	43 20	- 2 35	16 0 90
11 0 8 15				111 49 30 76	33 30	+ 2 54	16 3 10
15 0 9 45 2	19 47 57 06	56 45	- 0 61				16 1 68
16 0 10 6 0	19 52 14 52	13 93	- 0 59				
17 0 10 26				110 45 46 49	48 40	+ 1 91	16 1 56
18 0 10 45				110 33 43 63	46 00	+ 2 37	16 2 65
19 0 11 4 4	20 5 2 78	2 19	- 0 59	110 21 20 35	20 30	- 0 05	16 0 24
20 0 11 22 6	20 9 17 50	16 83	- 0 67	110 8 28 63	31 50	+ 2 87	16 3 90
21 0 11 39				109 58 20 99	20 00	- 0 99	16 1 03
22 0 11 56 2	20 17 44 48	43 86	- 0 62	109 41 48 73	46 20	- 2 53	16 1 90
23 0 12 11				109 27 53 38	50 50	- 2 88	16 1 30
24 0 12 26				109 13 32 23	33 20	+ 0 97	16 1 89
25 0 12 41				108 58 55 44	54 80	- 0 64	16 0 95
26 0 12 54				108 43 51 85	55 60	+ 3 75	16 1 10
28 0 13 18				108 12 58 00	56 70	- 1 30	16 5 04
29 0 13 29				107 56 56 23	57 70	+ 1 47	16 1 15
30 0 13 39 3	20 51 0 17	59 81	- 0 36	107 40 42 72	39 60	- 3 12	16 2 01
31 0 13 48				107 24 0 98	2 80	+ 1 82	16 2 96
Feb 1 0 13 56 9	20 59 10 89	10 32	- 0 57	107 7 7 66	7 70	+ 0 04	16 2 12
2 0 14 4 4	21 3 15 09	14 51	- 0 58	106 49 52 12	54 70	+ 2 58	16 1 25
3 0 14 10 8	21 7 18 13	17 71	- 0 42				
4 0 14 16 5	21 11 20 40	20 10	- 0 30	106 14 34 20	36 40	+ 2 20	16 1 86
5 0 14 21 6	21 15 22 00	21 64	- 0 36	105 56 30 75	32 00	+ 1 25	16 0 63
6 0 14 25 7	21 19 22 62	22 37	- 0 25	105 38 10 29	11 30	+ 1 01	16 0 11
7 0 14 29				105 19 32 19	34 70	+ 2 51	16 1 06
8 0 14 31 9	21 27 21 99	21 41	- 0 58	105 0 43 35	42 50	- 0 85	16 0 72
9 0 14 33 5	21 31 20 24	19 74	- 0 50	104 41 32 67	35 10	+ 2 43	16 0 48

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (Continued)

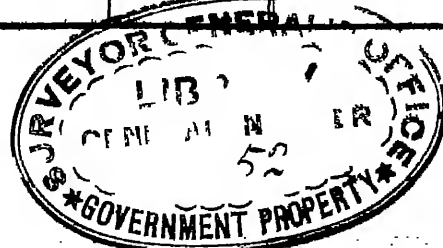
Mean Solar Time of Observation		Right Ascension of the Sun	Right Ascension from N.A.	Error from N.A.	North Polar Distance of the Sun	North Polar Distance from N.A.	Error from N.A.	Mean Hourly Semidiameter
1841								
Feb								
10	0 14 34				104 22 14 76	12 80	-1 96	16 1 96
11	0 14 35 0	21 39 14 72	14 06	-0 66	104 2 34 02	36 30	+2 28	16 0 92
12	0 14 34 8	21 43 10 86	10 07	-0 79	103 42 45 94	45 80	-0 14	16 0 77
13	0 14 33 1	21 47 5 75	5 35	-0 40	103 22 38 39	41 70	+3 31	15 59 46
16	0 14 24				102 21 11 47	11 90	+0 43	16 0 43
17	0 14 20				102 0 14 46	17 70	+3 94	15 59 88
18	0 14 15				101 39 10 06	11 90	+1 84	
19	0 14 10 0	22 10 22 14	21 93	-0 21	101 17 52 87	55 10	+2 23	16 0 57
20	0 14 4				100 56 25 55	27 70	+2 15	16 0 79
21	0 13 57				100 34 46 29	50 10	+3 81	16 0 21
22	0 13 49				100 13 2 61	2 70	+0 09	16 0 75
23	0 13 41				99 51 4 81	6 20	+1 39	16 2 21
24	0 13 32 9	22 29 27 80	27 16	-0 64	99 29 2 96	0 80	-2 16	16 1 28
25	0 13 23				99 6 42 16	46 80	+4 64	16 1 23
26	0 13 13				98 44 27 00	24 90	-2 10	16 0 10
27	0 13 2				98 21 53 60	55 40	+1 80	16 2 59
28	0 12 51 4	22 44 32 36	32 28	-0 08	97 59 19 28	18 70	-0 58	16 3 61
Mar								
1	0 12 40				97 36 36 22	35 30	-0 92	16 0 42
2	0 12 28				97 13 43 07	45 40	+2 33	
3	0 12 15				96 50 49 69	49 60	-0 09	15 58 02
4	0 12 2 3	22 59 29 31	28 63	-0 68	96 27 45 31	48 10	+2 79	16 0 72
5	0 11 48 5	23 3 12 09	11 49	-0 60	96 4 42 12	41 40	-0 72	16 2 41
6	0 11 34				95 41 30 15	29 70	-0 45	15 59 81
8	0 11 4				94 54 53 45	53 20	-0 25	16 1 23
9	0 10 49				94 31 27 39	29 10	+1 71	16 1 01
10	0 10 34				94 8 2 44	1 40	-1 04	
11	0 10 18 0	23 25 20 58	20 08	-0 50	93 44 28 95	30 70	+1 75	16 1 90
12	0 10 1 7	23 29 0 78	0 31	-0 47	93 20 58 59	57 00	-1 59	16 1 08
13	0 9 40				92 57 19 09	21 00	+1 91	16 0 81
14	0 9 28				92 33 43 25	43 00	-0 25	16 2 05
15	0 9 11 3	23 39 59 94	59 37	-0 57	92 10 2 30	3 30	+1 00	15 59 88
16	0 8 53				91 46 21 35	22 20	+0 85	16 0 81
18	0 8 18				90 58 56 34	57 60	+1 26	16 3 36
19	0 8 0				90 35 17 01	14 90	-2 11	
20	0 7 43				90 11 31 63	32 40	+0 77	
23	0 6 48				89 0 25 25	29 80	+4 55	
24	0 6 30				88 36 52 10	51 90	-0 20	
25	0 6 11				88 13 12 55	16 20	+3 65	
26	0 5 53				87 49 43 05	43 00	-0 05	
27	0 5 34				87 26 8 93	12 80	+3 87	
28	0 5 16				87 2 44 72	40 70	+0 98	
29	0 4 57				86 39 18 75	22 10	+3 35	
30	0 4 39				86 6 2 27	2 70	+0 43	
31	0 4 20				85 52 44 45	47 50	+3 05	
April								
1	0 4 2				85 29 36 82	36 90	+0 08	
2	0 3 44				85 6 28 05	31 30	+3 25	16 1 45
3	0 3 25 7	0 49 7 84	7 54	-0 30	84 43 32 86	31 10	-1 76	16 1 17
4	0 3 7 6	0 52 46 34	46 02	-0 32	84 20 36 39	36 50	+0 11	16 0 43
5	0 2 50				83 57 46 18	47 80	+1 62	16 0 96
6	0 2 32				83 35 5 14	5 30	+0 16	16 0 52
7	0 2 14 8	1 3 43 03	42 48	-0 55	83 12 26 24	29 30	+3 06	15 59 64
8	0 1 57 5	1 7 22 23	21 71	-0 52	82 50 3 38	0 30	-3 08	16 0 32
13	0 0 35				80 59 29 46	29 50	+0 04	15 59 64
14	0 0 19				80 37 46 57	48 50	+1 93	16 1 08
15	0 0 4				80 16 11 98	16 50	+4 52	16 0 95
15	23 59 49				79 54 55 09	54 20	-0 89	16 0 76
17	23 59 21				79 12 38 22	39 50	+1 28	16 0 60

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (*C n t u d*)

M	S lar Tim f	A R f m	A R from	Err f N A	N P D fr m	N P D	Err f N A	M
	Ob rv tl	Ob rv tl	N A		Ob rv tl	fr m N A		H S mid
1841	m							
April	18 23 59 7 4	1 47 53 67	53 39	-0 28	78 51 51 04	47 80	-3 24	15 59 59
	19 23 58 54				78 31 5 46	7 20	+1 74	15 59 86
	20 23 58 41 4	1 55 20 68	20 43	-0 25	78 10 38 68	37 80	-0 88	15 59 55
	21 23 58 29				77 50 17 93	20 00	+2 07	16 0 63
	22 23 58 17 3	2 2 49 69	49 24	-0 45	77 30 17 15	14 20	-2 90	15 58 95
	23 23 58 5 9	2 6 34 77	34 31	-0 46	77 10 18 59	20 80	+2 21	15 59 84
	25 23 57 44				76 31 15 75	12 50	-3 25	16 1 02
	26 23 57 34 2	2 17 52 72	52 31	-0 41	76 11 55 98	58 20	+2 22	16 0 68
	27 23 57 24 8	2 21 39 74	39 28	-0 46	75 52 57 21	57 60	+0 39	16 1 21
May	4 23 56 32 1	2 48 22 80	22 45	-0 35	73 46 38 56	41 70	+3 14	16 1 03
	5 23 56 26				73 29 43 68	41 40	-2 28	16 0 72
	7 23 56 17				72 56 29 56	30 10	+0 54	16 2 15
	8 23 56 14				72 40 22 75	19 60	-3 15	15 59 97
	9 23 56 11 0	3 7 44 47	44 15	-0 32	72 24 21 85	26 40	+4 55	16 2 10
	10 23 56 8				72 8 52 70	50 70	-2 00	16 2 03
	11 23 56 6				71 53 30 03	32 80	+2 77	16 3 19
	13 23 56 4				71 23 52 98	51 70	-1 28	16 1 90
	17 23 56 8				70 28 12 72	16 00	+3 28	16 2 30
	18 23 56 10				70 10 10 78	10 90	-4 88	15 59 50
	19 23 56 12 8	3 47 11 81	11 77	-0 04	70 2 22 08	26 10	+4 02	16 3 07
	21 23 56 20				69 37 59 09	57 90	-1 19	
	22 23 56 25				69 26 13 39	10 00	+1 61	16 1 50
	23 23 56 30				69 14 54 79	53 30	-1 49	16 0 16
	24 23 56 35				69 3 49 19	52 90	+3 71	16 0 99
	25 23 56 40 7	4 11 19 19	19 15	-0 04	68 53 14 99	14 20	-0 79	16 2 85
	26 23 56 47				68 42 53 70	57 40	+3 70	16 2 30
	27 23 56 54 1	4 19 25 67	25 53	-0 14	68 33 3 15	2 60	-0 55	15 59 00
	28 23 57 17	4 23 29 75	29 39	-0 36	68 23 27 75	30 10	+2 35	16 2 59
	29 23 57 9 1	4 27 33 76	33 69	-0 07	68 14 20 34	20 00	-0 34	16 0 56
	30 23 57 17 0	4 31 38 34	38 40	+0 06	68 5 39 11	32 60	-6 51	15 59 08
J ne	1 23 57 34 5	4 39 48 99	49 05	+0 06	67 49 5 63	6 20	+0 57	16 3 16
	2 23 57 44 1	4 43 54 79	54 94	+0 15	67 41 24 34	27 70	+3 36	16 2 72
	3 23 57 53 4	4 48 1 05	1 21	+0 16	67 34 13 78	12 50	-1 28	16 4 01
	4 23 58 3 4	4 52 7 55	7 83	+0 28	67 27 18 04	20 70	+2 66	16 1 90
	5 23 58 14				67 20 54 98	52 40	-2 58	16 2 39
	6 23 58 25				67 14 40 44	47 90	+2 46	15 58 99
	7 23 58 36 1	5 4 29 89	29 59	-0 30	67 9 7 75	7 40	-0 35	15 59 55
	8 23 58 46 9	5 8 37 63	37 69	+0 06	67 3 47 23	50 80	+3 57	15 59 59
	9 23 58 58 5	5 12 45 68	45 78	+0 10	66 59 0 62	58 30	-2 32	16 2 90
	10 23 59 10 3	5 16 54 08	54 19	+0 11	66 54 26 17	30 10	+3 93	16 1 3
	11 23 59 22 7	5 21 3 12	2 89	-0 23	66 50 26 15	26 20	+0 05	
	13 23 59 47 8	5 29 21 38	20 83	-0 55	66 43 34 00	32 00	-2 00	15 59 02
	15 0 0 0 5	5 33 30 53	30 07	-0 46	66 40 37 77	41 80	+4 03	16 3 16
	16 0 0 13 2	5 37 39 91	39 45	-0 46	66 38 17 97	16 10	-1 87	16 4 64
	17 0 0 25 9	5 41 49 15	48 95	-0 20	66 36 12 27	15 30	+3 03	16 5 55
	18 0 0 39				66 34 43 12	39 30	-3 82	16 2 06
	19 0 0 51 9	5 50 8 41	8 18	-0 23	66 33 26 49	28 10	+1 61	16 1 96
	24 0 1 57				66 33 43 50	44 90	+1 40	15 59 85
	5 0 2 9 8	6 15 5 88	5 70	-0 18	66 35 3 26	2 60	-0 66	16 1 01
	26 0 2 22 2	6 19 14 85	14 99	+0 14				16 4 9
	27 0 2 34 8	6 23 24 15	24 11	-0 04				15 58 37
	29 0 2 59 5	6 31 41 97	41 79	-0 18				
July	5 0 4 7				67 10 28 63	26 20	-2 43	15 56 89
	6 0 4 17				67 16 5 66	11 10	+5 44	15 56 56
	7 0 4 27				67 22 23 16	19 80	-3 36	15 58 52
	10 0 4 55				67 43 53	6 60	+1 07	15 58 13

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (Continued)

M S l T m f	A R f m	A R f m	E f N A	N P D f m	N P D	Erro f N A	M an
Ob rv ti	Ob ti	N A		Ob rv ti	f m N A		H S mid
1841							/
July 13 0 5 19				68 7 26 88	21 20	-5 68	15 58 46
14 0 5 26				68 16 9 50	11 40	+1 90	15 59 06
15 0 5 33				68 25 27 27	24 10	-3 17	15 57 25
16 0 5 39				68 34 55 72	58 80	+3 08	15 57 37
17 0 5 44				68 44 56 17	55 50	-0 67	15 57 25
18 0 5 49				68 55 13 92	13 90	-0 02	15 56 56
19 0 5 54				69 5 57 31	53 60	-3 71	16 0 65
20 0 5 58				69 16 54 36	54 50	+0 14	15 58 30
22 0 6 4				69 40 2 32	59 10	-3 22	16 4 55
26 0 6 10				70 30 9 88	10 0	+0 82	
27 0 6 10				70 43 32 17	32 60	+0 43	16 1 32
28 0 6 9				70 57 12 41	13 70	+1 29	16 2 35
29 0 6 8				71 11 18 19	13 80	-4 89	16 1 39
30 0 6 6				71 25 30 21	31 60	+1 39	
31 0 6 4				71 40 12 03	8 00	-4 03	16 1 25
Aug 1 0 6 1				71 54 59 44	2 40	+2 96	16 1 35
2 0 5 56 7	8 48 42 67	42 78	+0 11	72 10 19 77	14 60	-5 17	16 1 25
3 0 5 52				72 25 45 33	44 20	-1 13	16 0 92
4 0 5 48				72 41 33 79	30 90	-2 89	15 58 61
6 0 5 36				73 13 53 60	54 70	+1 10	15 59 17
7 0 5 29				73 30 34 06	31 40	-2 66	15 57 18
10 0 5 6				74 21 59 63	56 40	-3 23	15 58 44
16 0 4 4				76 11 25 53	27 40	+1 87	
21 0 2 58 1	10 0 38 14	38 24	+0 10	77 48 51 11	49 40	-1 71	15 57 78
24 0 2 12 7	10 11 42 31	42 54	+0 23	78 49 33 97	35 30	+1 33	16 2 15
27 0 1 24				79 51 52 17	56 00	+3 83	16 2 21
28 0 1 7				80 13 8 66	2 40	-6 26	16 3 19
30 0 0 30 9	10 33 39 55	39 67	+0 12	80 55 40 89	42 80	+1 91	16 0 08
31 0 0 13				81 17 20 35	16 10	-4 25	16 3 16
Sept 2 23 59 16				82 22 49 06	45 40	-3 66	16 0 65
3 23 58 56 9	10 51 48 08	47 82	-0 26	82 44 55 00	50 50	-4 50	16 0 50
5 23 58 17 1	10 59 1 23	1 27	+0 04	83 29 23 09	22 00	-1 09	16 0 30
6 23 57 57				83 51 47 52	47 80	+0 28	16 0 20
7 23 57 36 8	11 6 13 96	13 93	-0 03	84 14 20 03	19 90	-0 13	16 1 30
8 23 57 16 3	11 9 49 93	50 05	+0 12	84 36 56 27	57 90	+1 63	16 0 5
9 23 56 55 9	11 13 26 00	26 99	-0 01	84 59 44 62	41 40	-3 22	16 2 72
12 23 55 53 6	11 24 13 16	13 19	+0 03	86 8 23 66	22 20	-1 46	16 3 16
14 23 55 11 7	11 31 24 27	24 30	+0 03	86 54 36 11	31 00	-5 11	16 0 42
15 23 54 50 9	11 34 59 97	59 80	-0 17	87 17 39 72	40 90	+1 18	16 2 45
16 23 54 29 8	11 38 35 37	35 27	-0 10	87 40 56 73	53 70	-3 03	16 1 99
19 23 53 26 7	11 49 21 83	21 71	-0 12	88 50 53 67	47 60	-6 07	15 58 45
23 23 52 3 4	12 3 44 46	44 40	-0 06	90 24 26 68	21 30	-5 38	16 1 43
24 23 51 42 0	12 7 20 53	20 35	-0 18	90 47 47 68	46 40	-1 28	16 1 15
25 23 51 22				91 11 14 37	11 50	-2 87	16 2 21
26 23 51 2				91 34 36 36	36 20	-0 16	16 0 12
27 23 50 42				91 58 2 99	0 30	-2 69	16 1 12
28 23 50 22				92 21 28 13	23 40	-4 73	16 0 90
30 23 49 43				93 8 5 73	5 40	-0 33	16 1 22
Oct 1 23 49 24				93 31 26 59	23 50	-3 09	16 1 17
7 23 47 37				95 50 11 70	12 70	+1 00	16 0 81
8 23 47 21				96 13 10 93	7 60	-3 33	16 1 08
13 23 46 7				98 6 20 58	22 30	+1 72	16 0 03
15 23 45 40 5	13 24 4 80	4 70	-0 10	98 51 0 18	55 40	-4 78	16 3 08
26 23 44 1				102 45 28 03	27 20	-0 83	16 1 56
29 23 43 48				103 45 35 52	36 10	+0 58	
31 23 43 44				104 24 40 26	37 30	-2 96	16 1 43



RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (*C nt nued*)

M an Solar Tum f Ob rv tl	A R f m Ob rv tl	A R fr m N A.	E f N A	N P D from Ob rv tl	N P D fr m N A	Er f N A	M an H S mid
1841	m			/	/		
Nov 3 23 43 43				105 21 21 76	24 10	+ 2 34	16 2 21
4 23 43 44				105 39 46 09	50 10	+ 4 01	16 1 83
7 23 43 54				106 33 30 21	33 50	+ 3 29	16 2 81
9 23 44 4				107 8 0 19	59 70	- 0 49	
10 23 44 11				107 24 51 04	46 60	- 4 44	16 1 98
11 23 44 18				107 41 14 31	15 40	+ 1 09	
12 23 44 27				107 57 29 60	25 80	- 3 80	16 2 35
14 23 44 46				108 28 48 30	49 80	+ 1 50	16 4 59
15 23 44 56				108 44 5 08	2 50	- 2 58	15 59 75
16 23 45 8				108 58 56 12	55 20	- 0 92	16 3 80
17 23 45 21							16 0 75
18 23 45 34				109 27 39 97	38 90	- 1 07	16 2 70
19 23 45 48 2	15 42 11 78	11 55	- 0 23	109 41 26 04	29 10	+ 3 06	16 2 05
21 23 46 18 9	15 50 35 62	35 31	- 0 31	110 8 7 22	4 70	- 2 52	16 1 58
22 23 46 35 3	15 54 48 63	48 35	- 0 28	110 20 49 43	49 30	- 0 13	16 1 01
23 23 46 52				110 33 16 16	11 30	- 4 86	16 0 03
26 23 47 48				111 7 56 31	58 50	+ 2 19	16 1 12
30 23 49 13				111 48 51 22	45 90	- 5 32	15 59 32
Dec 1 23 49 35				111 57 55 41	54 90	- 0 51	16 2 23
3 23 50 23				112 15 1 11	59 50	- 1 61	16 0 01
4 23 50 48 5	16 46 21 24	20 82	- 0 42	112 22 53 76	52 60	- 1 16	16 1 55
6 23 51 39 6	16 55 5 52	5 15	- 0 37				16 3 72
7 23 52 5 8	16 59 28 29	28 12	- 0 17	112 43 53 12	54 00	+ 0 88	16 3 36
9 23 53 0				112 55 41 12	41 30	+ 0 18	16 1 75
10 23 53 27				113 0 54 30	54 10	- 0 20	16 3 16
11 23 53 55				113 5 39 38	39 40	+ 0 02	
12 23 54 24				113 9 54 86	57 20	+ 2 34	
13 23 54 53				113 13 46 24	47 30	+ 1 06	
14 23 55 22				113 17 8 58	9 50	+ 0 92	16 1 92
17 23 56 50				113 24 24 94	28 00	+ 3 06	16 2 21
18 23 57 20				113 26 2 05	57 80	- 4 25	
19 23 57 50				113 26 59 38	59 40	+ 0 02	16 2 89
20 23 58 20				113 27 37 69	32 80	- 4 89	16 3 95
25 0 0 20				113 25 4 51	3 00	- 1 51	
1842							
Jan 5 0 6 36				112 39 40 88	38 40	- 2 48	
6 0 6 3				112 32 49 18	45 80	- 3 38	16 2 36
7 0 6 29				112 25 24 88	26 30	+ 1 42	16 0 61
9 0 7 20				112 9 24 96	27 80	+ 2 84	
10 0 7 45				112 0 46 56	49 30	+ 2 74	
13 0 8 56				111 32 21 58	20 10	- 1 48	
14 0 9 18				111 22 1 06	0 00	- 1 05	16 0 95
15 0 9 40				111 11 14 54	15 20	+ 0 66	16 2 43
16 0 10 1				111 0 5 18	6 10	+ 0 92	
18 0 10 41				110 36 34 64	36 40	+ 1 76	16 3 83
19 0 11 0				110 24 16 37	16 50	+ 0 13	16 2 35
20 0 11 18				110 11 33 08	33 50	+ 0 42	16 3 06
21 0 11 36				109 58 26 87	28 00	+ 1 13	16 2 51
22 0 11 52				109 44 58 14	0 10	+ 1 96	16 1 12
23 0 12 8				109 31 9 58	10 40	+ 0 82	
24 0 12 23				109 16 55 35	59 10	+ 3 75	16 2 98
26 0 12 50				108 47 35 14	33 40	- 1 74	16 2 99
27 0 13 3				108 32 15 24	19 70	+ 4 46	16 0 52
28 0 13 15				108 16 47 29	45 70	- 1 59	16 1 41
29 0 13 26				108 0 49 17	52 10	+ 2 93	16 1 75
30 0 13 36				107 44 40 74	39 10	- 1 64	
31 0 13 45				107 28 4 17	7 10	+ 2 93	16 4 30

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (*C i n u d*)

Mean Solar Time of Observation				A R from Observation		A R from N A		Error N A		N P D from Observation		N P D from N A		Error N A		Mean H S mid	
1842																	
Feb	2	0	14	1						106	54	4	27	7	90	+ 3 63	16 3 13
	3	0	14	8						106	36	41	24	41	30	+ 0 06	
	4	0	14	14						106	18	53	87	57	20	+ 3 33	16 3 16
	5	0	14	19						106	0	56	26	56	10	- 0 16	16 2 56
	6	0	14	24						10	42	36	61	38	50	+ 1 86	
	7	0	14	28						105	24	5	56	4	80	- 0 76	16 2 95
	8	0	14	31						105	5	14	47	1	30	+ 0 83	16 3 15
	9	0	14	33						104	16	4	63	10	60	+ 5 97	
	10	0	14	34						104	26	48	0	51	00	+ 2 95	16 3 32
	11	0	14	35						104	7	16	81	17	10	+ 0 29	15 59 98
	12	0	14	34						103	47	25	83	29	20	+ 3 37	16 3 3
	13	0	14	33						103	27	28	11	27	80	- 0 34	
	14	0	14	32						103	7	12	33	13	20	+ 0 87	16 2 2
	15	0	14	29						102	46	43	86	46	10	+ 2 24	16 1 90
	16	0	14	26						102	26	7	95	6	70	- 1 25	16 3 01
	17	0	14	22						102	5	12	38	15	60	+ 3 22	16 1 56
	18	0	14	17						101	44	12	53	13	10	+ 0 57	16 3 01
	19	0	14	12						101	22	53	34	59	80	+ 6 46	16 1 3
	20	0	14	5						101	1	33	13	35	90	+ 2 77	
	21	0	13	58						100	39	58	66	1	80	+ 3 14	16 1 96
	22	0	13	51						100	18	13	94	18	00	+ 4 06	16 3 17
	23	0	13	43						99	56	25	49	24	70	- 0 79	16 5 30
	24	0	13	34						99	34	20	1	22	50	+ 2 05	16 2 28
	25	0	13	25						99	12	10	71	11	80	+ 1 09	16 2 3
	26	0	13	15						98	49	48	09	2	80	+ 4 11	16 2 25
	27	0	13	4						98	27	25	20	26	00	+ 0 80	
	28	0	12	53						98	4	49	49	51	60	+ 2 11	16 2 12
M	1	0	12	42						97	42	8	08	10	20	+ 2 12	16 4 15
	2	0	12	30						97	19	22	34	22	10	- 0 24	16 3 39
	3	0	12	17						96	50	27	24	27	50	+ 0 26	16 1 70
	4	0	12	4						96	33	23	05	27	00	+ 3 95	16 2 1
	5	0	11	50						96	10	19	73	21	00	+ 1 21	15 59 04
	6	0	11	36						95	47	8	27	9	70	+ 1 43	
	7	0	11	22						95	23	33	08	33	70	+ 0 62	16 0 52
	8	0	11	7						95	0	33	26	33	30	+ 0 04	16 1 38
	9	0	10	52						94	37	9	75	9	00	- 0 75	16 2 0
	10	0	10	37						94	13	37	93	41	00	+ 3 07	16 0 26
	11	0	10	21						93	50	10	66	9	90	- 0 76	16 3 70
	12	0	10	5						93	26	36	72	36	00	- 0 7	16 2 88
	13	0	9	49						93	2	53	50	59	70	+ 6 14	
	14	0	9	32						9	39	20	56	21	50	+ 0 94	16 0 2
	15	0	9	15						92	15	37	84	41	70	+ 3 86	15 58 47
	16	0	8	58						91	51	58	31	0	80	+ 2 49	16 3 8
	17	0	8	41						91	28	18	38	19	10	+ 0 72	16 2 88
	18	0	8	23						91	4	33	1	37	00	+ 3 85	16 5 33
	19	0	8	5						90	40	3	80	54	90	+ 1 10	16 4 06
	20	0	7	47						90	17	8	41	13	10	+ 4 69	
	22	0	7	11						89	29	49	11	51	70	+ 2 9	16 4 28
	23	0	6	5						89	6	5	97	12	80	+ 6 83	16 2 75
	24	0	6	34						88	42	34	77	35	80	+ 1 03	16 3 18
	25	0	6	15						88	18	58	81	0	80	+ 1 99	16 0 7
	28	0	5	19 3	0 26 2 12	2 33	- 0 09			87	8	31	59	31	00	- 0 59	16 2 83
	29	0	5	1						86	45	5	61	7	20	+ 1 59	16 4 3
	30	0	4	42 0	0 33 40 99	41 16	+ 0 17			86	21	40	64	47	10	+ 6 46	16 4 01
	31	0	4	24						85	58	29	17	31	00	+ 1 83	16 3 70
Apr 1	1	0	4							85	3	14	46	19	20	+ 4 74	16 2 71
	2	0	3	47						85	12	11	14	12	00	+ 0 86	16 2 36

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (Continued)

M an S l	Time	A R from	A R from	E	N P D from	N P D	Err	M
Ob	ti	Ob	N A	f N A	Ob	fr m	f N A	II S mld
1842	m	m						
April	3 0 3 29				84 49 6 25	9 90	+ 3 65	
	4 0 3 11				84 26 13 26	13 20	- 0 06	16 4 14
	0 2 53				84 16 72	22 20	+ 0 48	16 1 92
	6 0 2 35				83 40 34 67	37 20	+ 2 53	16 0 53
	7 0 2 18				83 17 55 41	58 60	+ 3 19	16 3 70
	8 0 2 10	1 6 28 59	28 40	- 0 14	82 55 21 09	26 80	+ 5 71	16 2 76
	9 0 1 43 6	1 10 7 71	8 01	+ 0 30	82 33 2 78	20	- 0 58	16 2 83
	10 0 1 27				82 10 40 43	45 10	+ 1 67	
	11 0 1 11				81 48 35 46	36 00	+ 0 4	16 1 60
	12 0 0 55				81 26 33 18	35 00	+ 1 82	16 1 45
	13 0 0 38 8	1 24 48 86	48 96	+ 0 10	81 4 43 37	42 70	- 0 67	16 1 23
	14 0 0 23				80 42 58 95	39 30	+ 0 30	16 2 90
	15 0 0 8				80 21 25 03	20 30	+ 0 27	16 1 72
	15 23 59 53	1 35 52 87	52 86	- 0 01	79 59 58 35	0 90	+ 2 50	16 3 16
	16 23 59 39				79 38 47 16	46 50	- 0 66	
	17 23 59 25				79 17 41 52	42 40	+ 0 88	16 1 63
	18 23 59 11				78 56 48 41	49 00	+ 0 59	16 0 81
	19 23 58 57				78 36 4 34	6 50	+ 2 16	16 3 12
	20 23 58 44				78 15 33 06	35 30	+ 2 4	15 9 26
	21 23 58 32				77 55 10 91	15 70	+ 4 79	16 0 52
	22 23 58 19				77 35 5 99	7 90	+ 1 91	16 3 20
	23 23 58 8				77 15 6 77	12 30	+ 5 33	
	25 23 57 45 6	2 13 10 48	10 55	+ 0 07				10 7 17
	26 23 57 35				76 16 39 24	41 90	+ 2 66	16 2 58
	27 23 57 26				75 57 37 20	38 20	+ 1 00	16 1 10
	28 23 57 16 2	2 24 30 63	30 84	+ 0 21	75 38 44 02	48 20	+ 4 18	16 1 43
	29 23 57 8				75 20 9 05	12 20	+ 3 10	16 2 92
	30 23 56 59 4	2 32 6 87	7 00	+ 0 13	75 1 47 14	50 70	+ 3 06	16 1 30
May	1 23 56 52 5	2 35 56 06	55 93	- 0 63	74 43 47 47	43 70	- 3 77	16 1 12
	2 23 56 45 1	2 39 45 76	45 41	- 0 35	74 25 48 15	51 80	+ 3 60	10 9 37
	3 23 56 38 4	2 43 35 46	35 44	- 0 02				16 1 70
	6 23 56 22 1	2 55 8 82	9 06	+ 0 24	73 17 3 49	0 50	- 2 99	16 1 72
	7 23 56 18				73 0 26 68	28 40	+ 1 72	16 2 70
	8 23 56 15				72 44 10 37	13 20	+ 2 83	16 2 44
	9 23 56 11 7	3 6 48 08	47 91	- 0 17	72 28 12 39	10 30	+ 2 91	16 1 94
	10 23 56 9				72 12 32 49	30 10	+ 2 61	16 4 63
	11 23 56 7				71 57 12 77	12 70	- 0 07	16 2 59
	12 23 56 6 5	3 18 32 47	31 93	- 0 54	71 42 8 63	8 30	- 0 33	15 59 11
	13 23 56 5 1	3 22 27 66	27 74	+ 0 08	71 27 18 33	22 60	+ 4 27	16 1 37
	15 23 56 5 6	3 30 21 20	21 05	- 0 15	70 58 49 17	47 60	- 1 57	16 1 16
	16 23 56 6 6	3 34 18 74	18 53	- 0 21	70 44 54 42	59 00	+ 4 58	16 3 01
	17 23 56 8 0	3 38 16 72	16 55	- 0 17	70 31 27 66	29 90	+ 2 24	15 58 61
	18 23 56 10				70 18 18 65	20 50	+ 1 85	16 0 90
	19 23 56 12 8	3 46 14 68	14 23	- 0 45	70 5 33 86	31 30	- 2 56	16 1 19
	21 23 56 19				69 40 52 24	54 20	+ 1 96	16 2 30
	2 23 56 23 3	3 58 14 82	14 72	- 0 10	69 29 8 85	6 60	- 2 25	16 1 25
	23 23 56 27 9	4 2 15 98	15 92	- 0 06	69 17 41 41	40 00	- 1 41	16 0 30
	24 23 56 33 5	4 6 18 13	17 64	- 0 49	69 6 34 06	34 70	+ 0 64	16 1 30
	25 23 56 38 5	4 10 19 84	19 88	+ 0 05	68 55 50 39	50 90	+ 0 51	16 2 61
	26 23 56 45 0	4 14 22 93	22 62	- 0 31	68 45 28 86	28 80	- 0 06	10 59 92
	27 23 56 52				68 35 26 15	28 50	+ 2 35	
	29 23 57 6				68 16 35 21	34 70	- 0 51	15 59 20
	31 23 57 23				67 59 10 14	11 90	+ 1 76	15 57 25
June	3 23 57 51				67 36 0 45	57 60	- 2 85	15 59 96
	5 23 58 11 2	4 55 14 85	15 02	+ 0 17	67 22 23 57	25 80	+ 2 23	16 0 75
	7 23 58 33				67 10 28 94	29 20	+ 0 26	16 1 10
	8 23 58 45	5 7 38 46	38 15	- 0 31	67 5 4 46	6 80	+ 2 34	16 0 72

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (Cont d)

M an S i T m f	A R f m	A R f m	Err f N A	N P D f r m	N P D	E f N A	M
Ob t i	Ob r v t i	N A		Ob t i	f r m N A		H S m d
1842							
J n 10 23 59 8				66 55 32 07	34 80	+ 2 73	16 0 45
11 23 59 20 2	5 20 3 47	3 60	+ 0 13	66 44 16 95	19 70	+ 2 75	16 5 57
13 23 59 45				66 41 26 64	23 70	- 2 94	16 2 70
14 23 59 58				66 34 59 35	3 90	+ 4 55	16 3 30
18 0 0 36				66 32 54 92	54 20	- 0 72	16 2 41
20 0 1 2				66 32 22 54	26 60	+ 4 06	16 2 79
21 0 1 15				66 32 28 01	23 80	- 4 21	16 2 27
22 0 1 27 3	6 1 36 43	36 74	+ 0 31	66 32 44 34	45 70	+ 1 36	16 3 52
23 0 1 40 4	6 5 46 39	46 38	- 0 01	66 33 30 39	32 40	+ 2 01	16 1 75
24 0 1 53 4	6 9 50 80	55 56	- 0 24	66 34 41 30	43 80	+ 2 4	16 1 15
2 0 2 59				66 40 00 21	46 10	- 4 11	16 0 63
28 0 2 43 3	6 26 32 00	32 13	+ 0 13	66 43 34 63	36 20	+ 1 57	16 6 31
29 0 2 50 6	6 30 41 02	40 94	- 0 08				
J ly 2 0 3 31				66 54 31 92	33 10	+ 1 18	16 3 67
6 0 4 15				67 14 48 20	48 20	0 00	16 0 79
7 0 4 25 0	7 3 43 16	43 11	- 0 05	67 20 00 65	51 70	+ 1 05	
11 0 5 18	7 20 6 24	6 28	+ 0 04	67 49 2 72	0 10	- 2 62	16 3 26
12 0 5 10 2	7 24 11 23	11 00	- 0 23	67 56 08 66	59 90	+ 1 24	16 3 70
14 0 5 25 0	7 32 19 10	19 02	- 0 08	68 14 1 31	7 20	+ 5 89	16 0 68
15 0 5 31 8	7 36 22 50	22 32	- 0 18	68 23 15 12	14 40	- 0 72	16 1 75
16 0 5 38				68 32 42 38	43 40	+ 1 02	16 0 61
20 0 5 57				69 14 13 64	16 30	+ 2 66	15 9 97
21 0 6 1				69 25 32 85	32 50	- 0 35	16 0 76
2 0 6 3				69 37 12 30	9 30	- 3 00	16 0 61
25 0 6 9				70 14 5 26	1 90	- 3 36	16 0 28
26 0 6 9 4	8 20 22 33	22 13	+ 0 10	70 26 08 80	59 30	+ 0 50	16 3 61
27 0 6 9 4	8 24 18 91	19 02	+ 0 11	70 40 18 07	16 30	- 2 27	16 0 0
29 0 6 8				71 7 47 04	47 80	+ 0 76	16 3 59
A g 1 0 6 1				71 51 27 21	25 10	- 2 11	15 58 93
2 0 5 57 3	8 47 46 2	46 39	+ 0 17	72 6 31 34	33 60	- 0 74	16 0 30
6 0 5 38				73 10 2 45	1 10	- 1 35	16 1 20
8 0 5 24				73 43 20 10	24 20	- 0 90	16 0 43
9 0 5 17				74 0 35 05	29 50	- 5 55	15 58 3
10 0 5 8				74 17 48 37	50 20	+ 1 83	16 0 03
11 0 5 0				74 35 29 89	25 80	- 4 09	16 1 10
12 0 4 50				74 53 22 31	16 10	- 6 21	
13 0 4 41				75 11 20 06	21 00	+ 0 94	
15 0 4 19				75 48 13 18	12 40	- 0 78	16 0 79
22 0 2 47				78 4 1 98	0 80	- 1 18	16 1 80
24 0 2 16				78 44 35 83	35 90	+ 0 07	15 58 60
25 0 2 0				79 5 11 13	9 80	- 1 33	15 57 87
31 0 0 17				81 12 4 47	2 60	- 1 87	15 58 9
S pt 2 23 59 21				82 17 33 87	29 10	- 4 77	16 0 41
6 23 58 3				83 46 20 18	28 40	+ 3 22	16 0 65
7 23 57 42				84 9 2 10	59 30	- 2 80	16 0 90
13 23 55 38				86 25 55 33	54 50	- 0 83	16 4 08
14 23 55 17				86 48 58 46	58 90	+ 0 44	16 1 25
15 23 54 56				87 12 9 06	6 80	- 2 26	16 2 01
16 23 54 35				87 35 15 66	17 70	+ 2 04	16 0 90
18 23 53 52 9	11 44 54 37	4 03	- 0 34	88 21 48 05	47 80	- 0 25	16 0 68
21 23 52 49				89 31 45 49	49 10	+ 3 61	16 2 14
22 23 52 28				89 05 16 00	12 60	- 3 40	16 1 96
23 23 52 8				90 18 37 32	37 00	- 0 32	16 0 48
25 23 51 27				91 5 26 86	27 30	+ 0 44	16 0 21
26 23 51 6				91 28 54 40	52 60	- 1 80	15 59 5
29 23 50 7 2	12 24 30 17	29 93	- 0 24	92 39 4 96	4 80	- 0 16	16 0 05

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (Continued)

M	Solar Time	Right Ascension	Right Ascension	Ecliptic Longitude	North Polar Distance	North Polar Distance	Ecliptic Longitude	M
Ob	Lat	Alt	NA	INA	Ob	NA	INA	Lat
1842	m	m						
O t	2 23 49 10				93 49 318	3 50	+ 0 32	16 0 56
	3 23 48 51 9	12 39 0 85	0 73	- 0 12				16 1 03
	4 23 48 33 9	12 42 39 42	39 27	- 0 15	94 35 28 07	30 20	+ 2 13	16 1 41
	5 23 48 16 4	12 46 18 40	18 15	- 0 25	94 58 42 53	8 60	- 3 93	16 0 16
	6 23 47 59				95 21 43 03	43 20	+ 0 17	16 2 72
	7 23 47 42				95 44 47 34	43 70	- 3 64	16 0 32
	12 23 46 24 4	13 12 1 86	1 87	+ 0 01	97 38 29 09	30 10	+ 1 01	16 2 75
	13 23 46 10 1	13 15 44 08	44 27	+ 0 19	98 0 56 81	57 60	+ 0 79	16 0 72
	15 23 45 43 1	13 23 10 25	10 63	+ 0 38				16 2 16
	16 23 45 30 8	13 26 54 37	54 65	+ 0 28	99 7 38 42	38 00	- 0 42	16 0 32
	17 23 45 19 4	13 30 39 45	39 24	- 0 21	99 29 36 92	36 30	- 0 62	16 0 6
	18 23 45 8				99 51 24 22	26 30	+ 2 08	16 0 81
	0 23 44 47 7	13 41 57 31	56 72	- 0 59	100 34 39 96	40 30	+ 0 34	15 58 68
	1 23 44 37 9	13 45 44 00	43 84	- 0 16	100 56 0 22	3 40	+ 3 18	15 57 71
	25 23 44 7				102 19 2 10	55 00	+ 2 90	16 0 0
	26 23 44 1 6	14 4 50 47	50 04	- 0 43	102 39 28 56	25 70	- 2 86	16 3 50
	27 23 43 56				102 59 48 08	44 50	- 3 8	16 1 48
	28 23 43 52				103 19 50 11	51 40	+ 1 29	16 1 38
	29 23 43 48 3	14 16 26 82	26 80	- 0 02				16 3 16
N	2 23 43 43				104 58 6 39	8 30	+ 1 91	16 1 23
	3 23 43 43 3	14 36 4 42	3 9	- 0 47	105 16 56 69	53 30	- 3 39	16 2 48
	6 23 43 49				106 11 32 85	36 00	+ 3 15	16 58 94
	7 23 43 53				106 29 18 06	18 10	+ 0 04	16 58 9
	10 23 44 9				107 20 44 53	42 10	- 2 43	16 1 43
	15 23 44 54				108 40 16 70	17 80	+ 1 10	15 59 6
	17 23 45 16				109 9 52 32	51 80	- 0 2	16 58 82
	20 23 45 58				109 51 39 61	37 30	- 2 31	16 1 2
	1 23 46 13				110 4 54 22	49 50	- 4 72	16 2 61
	24 23 47 4							16 2 4
	25 23 47 23				110 53 55 44	54 50	- 0 94	16 2 43
	26 23 47 41 6	16 10 44 21	44 61	+ 0 40	111 9 9 50	12 90	+ 3 40	16 2 67
	28 23 48 22 9	16 19 18 74	18 72	- 0 02	111 26 40 23	38 00	- 2 23	16 2 35
	29 23 48 44 5	16 23 36 97	36 86	- 0 11	111 36 41 53	44 10	+ 2 57	16 4 79
	30 23 49 7				111 46 27 65	25 30	- 2 3	16 0 6
D	1 23 49 29 6	16 32 15 30	15 15	- 0 1	111 55 41 64	41 40	- 0 24	16 1 2
	2 23 49 53	16 36 3 26	35 25	- 0 01	112 4 33 65	32 30	- 1 35	16 2 7
	3 23 50 17				112 12 56 22	57 60	+ 1 38	16 1 88
	4 23 50 41 9	16 45 17 28	17 21	- 0 07	112 21 2 20	56 90	- 5 30	16 2 13
	6 23 51 33				112 35 35 68	37 00	+ 1 32	16 1 88
	7 23 51 59				112 42 15 77	17 20	+ 1 43	16 1 1
	8 23 52 25				112 48 29 63	30 60	+ 0 97	16 2 96
	11 23 53 47 9	17 15 59 98	59 93	- 0 0	113 4 28 38	28 30	- 0 08	16 3 01
	12 23 54 16 6	17 20 25 14	24 78	- 0 36				16 2 0
	13 23 54 45				113 12 49 98	49 70	- 0 28	16 2 88
	16 23 56 12 0	17 38 7 14	6 90	- 0 19	113 21 57 76	53 20	- 4 56	16 2 12
	17 23 6 41				113 23 59 68	58 50	- 1 18	15 59 37
	18 23 57 10 9	17 46 59 45	59 31	- 0 11	113 25 37 71	35 60	- 2 11	16 4 92
	19 23 57 41 0	17 51 26 17	26 74	- 0 43	113 26 42 63	44 40	+ 1 77	16 1 15
	21 23 58 40 4	18 0 18 82	18 87	+ 0 0	113 27 39 84	37 20	- 2 64	16 0 63
	3 23 59 40 9	18 9 12 64	12 15	- 0 39				16 59 84
	25 0 0 10 9	18 13 39 18	38 78	- 0 40	113 25 22 80	23 90	+ 1 10	16 0 90
	26 0 0 40 4	18 18 5 34	5 35	+ 0 01	113 23 43 26	43 00	- 0 26	16 1 32
	28 0 1 40 2	18 26 58 3	58 18	- 0 17	113 18 55 64	55 70	+ 0 06	16 1 61
	29 0 2 9 7	18 31 24 51	24 36	- 0 1	113 15 48 83	49 90	+ 1 07	16 1 01
	30 0 2 39 1	18 35 50 59	50 33	- 0 26	113 12 16 65	16 10	- 0 55	16 1 99
	31 0 3 8				113 8 15 02	14 30	- 0 72	16 0 76

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (*Continued*)

M	S	T	M	f	A R from	A R from	Err	f N A	N P D from	N P D	Err	f N A	M an
Ob	rv	tio			Ob	tio			Ob	rv	tio		H S mid
1843													
Ja	3	0	4	33					112 53	22 81	22 50	-0 31	16 0 43
	4	0	5	1									16 1 55
	5	0	5	28 8	19 2	20 12	19 95	-0 17	112 41	12 11	11 20	-0 91	16 3 55
	6	0	5	55 6	19 6	43 63	43 51	-0 12	112 34	19 95	25 00	+5 05	16 3 01
	7	0	6	22 2	19 11	6 74	6 59	-0 15	112 27	13 05	12 00	-1 05	16 1 43
	8	0	6	48					112 19	30 50	32 60	+2 10	16 2 50
	10	0	7	38					112 2	51 76	55 20	+3 44	16 2 96
	11	0	8	2 6	19 28	33 86	33 63	-0 23	111 53	59 95	57 60	-2 35	16 1 63
	12	0	8	26					111 44	32 19	34 50	+2 31	16 1 36
	17	0	10	15					110 51	26 94	26 20	-0 74	16 1 19
	20	0	11	11 6	20 7	12 39	12 46	+0 07	110 14	40 88	45 10	+4 22	16 1 99
	22	0	11	45 9	20 15	39 90	39 99	+0 09	109 48	23 99	22 80	-1 19	16 3 79
	23	0	12	2 0	20 19	52 57	52 63	+0 06	109 34	38 86	38 20	-0 66	16 2 63
	25	0	12	32					109 6	2 30	4 10	+1 80	16 4 39
	26	0	12	46									16 0 70
	27	0	12	58					108 36	4 03	5 70	+1 67	15 59 91
	28	0	13	11					108 20	33 18	35 90	+2 72	16 2 45
	29	0	13	22 0	20 44	52 10	52 02	-0 08	108 4	46 81	46 10	-0 71	
	30	0	13	32 8	20 48	59 48	59 10	-0 38	107 48	33 41	37 00	+3 59	16 3 39
	31	0	13	42 1	20 53	5 39	5 36	-0 03	107 32	5 30	8 80	+3 50	16 1 24
Feb	1	0	13	50 7	20 57	10 63	10 80	+0 17	107 15	17 70	22 00	+4 30	15 57 27
	2	0	13	59 0	21 1	15 51	15 40	-0 11	106 58	18 10	17 10	-1 00	16 1 45
	3	0	14	6					106 40	57 89	54 30	-3 59	16 2 9
	4	0	14	13					106 23	9 98	14 30	+4 32	16 3 59
	5	0	14	18 2	21 13	24 38	24 19	-0 19	106 5	17 18	17 30	+0 12	16 0 81
	6	0	14	23					105 47	3 52	3 90	+0 38	16 1 29
	7	0	14	27					105 28	31 55	34 50	+2 95	16 0 76
	8	0	14	29 7	21 25	25 56	25 47	-0 09	105 9	43 75	49 40	+5 65	16 1 52
	9	0	14	31 7	21 29	24 10	24 23	+0 13	104 50	47 08	49 00	+1 92	16 1 52
	10	0	14	33 1	21 33	22 08	22 19	+0 11					16 2 43
	11	0	14	33 7	21 37	19 40	19 35	-0 05	104 12	3 05	4 30	+1 25	16 3 01
	12	0	14	34 4	21 41	16 25	15 72	-0 53	103 52	17 31	20 80	+3 49	16 1 59
	13	0	14	38 0	21 45	11 44	11 32	-0 12	103 32	22 71	23 60	+0 89	16 2 37
	14	0	14	31 3	21 49	6 21	6 15	-0 06	103 12	8 98	13 30	+4 32	16 2 92
	15	0	14	28 7	21 53	0 30	0 23	-0 07	102 51	44 96	49 90	+4 94	16 3 45
	16	0	14	25 4	21 56	53 60	53 58	-0 02	102 31	9 69	14 10	+4 41	16 0 04
	17	0	14	22					102 10	24 86	26 40	+1 54	16 2 83
	18	0	14	16 8	22 4	38 12	38 13	+0 01	101 49	22 97	27 00	+4 03	16 1 54
	19	0	14	11 6	22 8	29 40	29 38	-0 02	101 28	14 64	16 30	+1 66	16 1 67
	20	0	14	6					101 6	56 25	54 80	-1 45	15 58 88
	21	0	13	58 9	22 16	9 91	9 88	-0 03	100 45	24 37	22 70	-1 67	16 4 48
	22	0	13	51 4	22 19	58 97	59 16	+0 19	100 23	37 78	40 50	+2 72	
	23	0	13	44					100 1	45 10	48 80	+3 70	16 2 59
	24	0	13	35					99 39	48 66	47 80	-0 86	16 2 65
	25	0	13	26					99 17	34 43	37 90	+3 47	16 2 76
	27	0	13	6 3	22 38	56 44	56 54	+0 10	98 32	51 59	53 50	+1 91	16 0 96
	28	0	12	56					98 10	17 15	19 80	+2 65	15 58 73
Mar	1	0	12	44 5	22 46	27 65	27 54	-0 11	97 47	36 37	38 90	+2 53	16 0 28
	2	0	12	33					97 24	48 15	51 40	+3 25	16 1 08
	3	0	12	20					97 2	2 80	57 50	-5 30	16 2 32
	5	0	11	54 3	23 1	23 63	23 41	-0 22	96 15	48 81	52 60	+3 79	16 0 90
	6	0	11	40					95 52	46 34	42 50	-3 84	16 2 15
	7	0	11	26					95 29	25 84	27 70	+1 86	16 2 19
	8	0	11	12					95 6	10 83	8 60	-2 23	16 4 82
	9	0	10	57					94 42	44 02	45 60	+1 58	16 1 48
	10	0	10	41					94 19	15 66	19 20	+3 54	16 2 85
	11	0	10	26					93 55	49 87	49 60	-0 27	16 0 75

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (C n t n u e d)

M an S lar Tlm f Ob rv ti	A R fr m Ob ti	A R f m N A	Err f N A	N P D f m Ob rv ti	N P D f m N A	Err f N A	M H S mid
1843							
Mar 14 0 9 36				92 45 264	5 80	+ 3 16	16 2 90
15 0 9 19				92 21 28 70	27 30	- 1 40	16 2 50
16 0 9 2				91 57 47 12	47 40	+ 0 28	16 0 16
17 0 8 45				91 34 2 83	6 40	+ 3 57	16 0 65
18 0 8 27				91 10 25 19	24 80	- 0 39	16 0 81
19 0 8 9 0	23 52 49 37	49 39	+ 0 02	90 46 39 75	43 00	+ 3 25	16 0 61
20 0 7 51				90 23 1 42	1 10	- 0 32	
21 0 7 32 7	0 0 6 07	6 26	+ 0 19	89 59 18 80	19 50	+ 0 70	16 3 79
22 0 7 14 4	0 3 44 31	44 53	+ 0 22				16 1 50
23 0 6 56 4	0 7 22 79	22 70	- 0 09				16 1 19
24 0 6 38				88 48 16 02	20 40	+ 4 38	16 1 36
25 0 6 19				88 24 40 62	43 80	+ 3 18	15 59 88
27 0 5 43				87 37 31 42	37 40	+ 5 98	16 1 08
28 0 5 24				87 14 4 77	8 30	+ 3 53	15 59 44
29 0 5 6				86 50 37 95	42 60	+ 4 65	1 57 97
30 0 4 47				86 27 20 47	20 50	+ 0 03	15 52 28
31 0 4 29				86 4 10 5	2 40	+ 1 35	15 59 57
April 1 0 4 11				85 40 45 86	48 70	+ 2 84	16 2 27
5 0 2 59				84 8 44 26	4 40	+ 1 14	15 58 37
6 0 2 41				83 45 53 83	59 10	+ 5 27	16 2 36
7 0 2 24				83 23 17 74	19 40	+ 1 66	15 57 90
8 0 2 6				83 0 43 19	46 60	+ 3 11	16 2 81
10 0 1 33				82 15 59 60	2 80	+ 3 20	16 1 03
11 0 1 16				81 53 47 35	52 50	+ 5 15	16 2 76
12 0 1 0				81 31 48 29	50 50	+ 2 21	15 58 33
13 0 0 44				81 9 54 37	56 90	+ 2 53	16 2 0
14 0 0 28				80 48 12 39	12 10	- 0 29	16 2 10
15 0 0 12				80 26 32 78	36 40	+ 3 62	16 0 63
15 23 59 57 5	1 34 59 93	59 75	- 0 18	80 5 9 91	10 00	+ 0 09	15 58 99
16 23 59 43				79 43 48 02	53 50	+ 5 48	16 0 04
17 23 59 28				79 22 48 14	47 00	- 1 14	15 59 28
18 23 59 14				79 1 46 91	50 90	+ 3 99	16 2 16
19 23 59 1				78 41 0 23	5 40	+ 5 17	16 3 76
20 23 58 48				78 20 26 37	31 00	+ 4 63	16 1 10
21 23 58 35				78 0 2 19	7 90	+ 5 71	16 1 92
23 23 58 11				77 19 54 30	57 30	+ 3 00	16 1 48
24 23 58 0 0	2 8 31 15	31 20	+ 0 05	77 0 9 99	10 40	+ 0 41	16 0 30
25 23 57 49 1	2 12 16 81	17 03	+ 0 22	76 40 32 04	36 20	+ 4 16	16 3 10
26 23 57 39				76 21 11 58	15 00	+ 3 42	16 1 95
27 23 57 30				76 2 1 42	7 30	+ 5 88	16 0 99
28 23 57 20 4	2 23 37 63	37 51	- 0 12	75 43 8 32	13 40	+ 5 08	16 1 56
29 23 57 11 0	2 27 24 87	25 35	+ 0 48				15 56 95
30 23 57 3				75 6 8 38	8 10	- 0 28	16 1 35
May 1 23 56 56				74 47 54 81	57 50	+ 2 06	16 2 68
2 23 56 49				74 29 56 92	1 80	+ 4 88	16 2 19
3 23 56 42 2	2 42 42 11	42 08	- 0 03	74 12 19 45	21 70	+ 2 25	16 0 79
4 23 56 36				73 54 51 30	57 30	+ 6 00	16 1 96
5 23 56 31				73 37 46 09	48 80	+ 2 71	16 0 79
7 23 56 22 0	2 58 8 07	7 40	- 0 67	73 4 17 50	21 20	+ 3 70	16 1 39
8 23 56 18				72 48 1 98	2 70	+ 0 72	16 2 16
9 23 56 14				72 21 58 36	1 30	+ 2 94	16 0 99
10 23 56 12				72 16 14 42	17 40	+ 2 98	16 0 05
11 23 56 9 2	3 13 41 50	41 56	+ 0 06	72 0 47 81	51 40	+ 3 59	16 2 05
12 23 56 8				71 45 40 58	43 20	+ 2 62	16 0 45
13 23 56 7 0	3 21 32 42	32 04	- 0 38	71 30 50 26	53 40	+ 3 14	16 1 61
14 23 56 6 3	3 25 28 15	28 15	0 00	71 16 22 91	22 30	- 0 61	16 2 16
15 23 56 7 1	3 29 25 55	24 84	- 0 71	71 2 11 32	9 90	- 1 42	16 1 10

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (*Continued*)

Mean S l Time f Observed	A R f m Observed	A R f m N A	E f N A	N P D from Observed	N P D from N A	Error f N A	Mean H Sem d
1843	m						
May 16 23 56 7				70 48 14 82	16 70	+ 1 88	16 0 39
17 23 56 8 7	3 37 20 25	19 94	— 0 31	70 34 42 34	42 90	+ 0 56	16 2 16
18 23 56 10				70 21 25 35	28 70	+ 3 35	16 1 16
22 23 56 23				69 31 51 69	54 10	+ 2 41	16 0 25
23 23 56 28				69 20 26 55	22 10	— 4 45	16 0 21
27 23 56 52				68 37 45 61	49 20	+ 3 59	16 0 83
28 23 56 59 1	4 21 32 93	32 87	— 0 06	68 28 2 02	5 80	+ 3 78	16 2 15
29 23 57 6 9	4 25 37 30	37 10	— 0 20	68 18 39 36	44 70	+ 5 34	16 0 96
30 23 57 14 6	4 29 41 52	41 77	+ 0 25	68 9 48 33	46 30	— 2 03	16 1 12
31 23 57 23 7	4 33 47 24	46 86	— 0 38	68 1 6 94	10 50	+ 3 56	16 2 21
June 1 23 57 32 9	4 37 52 87	52 33	— 0 54	67 52 58 27	57 80	— 0 47	16 1 61
2 23 57 42				67 45 2 61	8 00	+ 5 39	16 0 79
3 23 57 50 7	4 46 4 01	4 43	+ 0 42	67 37 41 48	41 60	+ 0 12	16 3 76
4 23 58 1				67 30 33 57	38 70	+ 5 13	16 0 42
5 23 58 11 3	4 54 17 64	17 90	+ 0 26	67 23 56 01	59 20	+ 3 19	15 58 75
6 23 58 21 8	4 58 24 85	25 11	+ 0 26	67 17 39 98	43 60	+ 3 62	15 59 52
7 23 58 33				67 11 52 13	51 80	— 0 33	16 1 50
8 23 58 44				67 6 18 43	23 90	+ 5 47	16 1 79
9 23 58 56				67 1 18 42	20 10	+ 1 68	16 3 30
11 23 59 19				66 52 24 35	25 20	+ 0 85	16 0 96
12 23 59 31 1	5 23 13 68	13 78	+ 0 10	66 48 31 67	34 30	+ 2 63	16 2 10
14 23 59 56				66 42 2 72	5 90	+ 3 18	15 57 02
16 0 0 8 7	5 35 40 99	40 83	— 0 16	66 39 27 03	28 70	+ 1 67	16 0 82
17 0 0 21 3	5 39 50 22	50 12	— 0 10	66 37 13 03	16 00	+ 2 97	16 2 27
19 0 0 47				66 34 2 27	5 00	+ 2 73	16 1 45
20 0 1 0				66 33 6 31	6 70	+ 0 39	15 59 95
21 0 1 12 8	5 56 28 14	28 16	+ 0 02	66 32 32 23	33 30	+ 1 07	16 2 61
22 0 1 25 5	6 0 37 47	37 76	+ 0 29	66 32 23 89	24 80	+ 0 91	16 2 10
23 0 1 39				66 32 39 56	41 00	+ 1 44	16 2 59
25 0 2 4 6	6 13 6 34	6 44	+ 0 10	66 34 26 64	27 90	+ 1 26	16 0 39
26 0 2 18				66 35 59 75	58 60	— 1 15	16 2 43
27 0 2 30				66 37 55 25	54 00	— 1 25	16 0 21
29 0 2 55				66 42 59 28	58 70	— 0 58	16 0 54
30 0 3 7				66 46 7 80	7 80	0 00	16 2 95
July 1 0 3 19				66 49 41 72	41 30	— 0 42	16 1 10
2 0 3 31				66 53 34 99	39 20	+ 4 21	16 0 61
4 0 3 53				67 2 47 03	47 30	+ 0 27	16 3 61
6 0 4 15				67 13 29 84	31 30	+ 1 46	16 1 61
10 0 4 53				67 39 41 89	42 20	+ 0 31	16 3 87
11 0 5 1				67 47 8 78	13 10	+ 4 32	16 1 68
12 0 5 9				67 55 6 14	6 90	+ 0 76	15 59 36
13 0 5 17				68 3 17 39	23 30	+ 5 91	16 1 19
14 0 5 24				68 12 0 39	2 40	+ 2 01	16 0 83
21 0 6 1				69 22 51 76	52 10	+ 0 34	16 0 30
22 0 6 4				69 34 27 15	24 50	— 2 65	16 1 61
23 0 6 6				69 46 20 40	17 70	— 2 70	16 1 03
25 0 6 10				70 11 3 17	4 80	+ 1 63	15 59 92
27 0 6 11				70 37 15 05	11 30	— 3 75	16 1 65
29 0 6 10				71 4 33 69	34 90	+ 1 21	15 58 44
30 0 6 9				71 18 48 61	44 80	— 3 81	15 59 53
31 0 6 6				71 33 10 74	13 20	+ 2 46	15 59 59
Aug 2 0 6 0				72 3 3 45	3 70	+ 0 25	15 59 81
3 0 5 56				72 18 25 17	25 30	+ 0 13	
4 0 5 52							15 59 95
5 0 5 47				72 49 56 34	0 00	+ 3 66	15 59 15
7 0 5 34				73 22 43 25	41 10	— 2 15	16 0 30

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (Cont nued)

M	Solar Time	f	A R f m	A R f m	Err f N A	N P D from	N P D	Err f N A	M
Ob	rv	ti	Ob	ti	N A.	Ob	fr m N A		H S mid
1843			m						
A g	8	0 5 27				73 39 24 29	25 90	+ 1 61	16 0 52
	9	0 5 20				73 56 26 35	26 40	+ 0 05	
	10	0 5 11				74 13 42 26	42 40	+ 0 14	
	12	0 4 53				74 49 3 55	59 60	- 3 95	16 1 25
	13	0 4 43				75 6 57 74	0 40	- 2 66	16 2 45
	14	0 4 33				75 25 14 30	15 40	+ 1 10	
	15	0 4 22				75 43 42 40	44 50	+ 2 10	16 1 07
	17	0 3 58				76 21 23 06	23 60	+ 0 54	
	20	0 3 19				77 19 29 87	30 10	+ 0 23	16 1 01
	24	0 2 21				78 39 52 82	47 20	- 5 62	
	26	0 1 49				79 21 1 03	1 90	+ 0 87	16 3 83
	27	0 1 33				79 41 49 90	54 70	+ 4 80	16 0 24
	30	0 0 41				80 45 30 09	30 20	+ 0 11	16 1 45
	31	0 0 23				81 7 2 98	0 00	- 2 98	16 0 65
S pt	1	23 59 46				81 50 24 76	24 60	- 0 16	16 2 75
	2	23 59 27				82 12 17 14	18 60	+ 1 46	16 0 04
	5	23 58 28				83 18 42 44	44 50	+ 2 06	16 3 95
	6	23 58 8				83 41 8 21	6 60	- 1 61	16 2 16
	9	23 57 6 7	11 11 42 48	42 67	+ 0 19	84 48 46 21	49 20	+ 2 99	15 59 73
	10	23 56 46				85 11 32 62	34 50	+ 1 88	16 0 92
	11	23 56 25				85 34 20 46	24 90	+ 4 44	16 1 79
	12	23 56 5				85 57 21 01	19 90	- 1 11	16 0 68
	13	23 55 43				86 20 20 01	19 40	- 0 61	16 3 83
	15	23 55 1				87 6 27 65	30 30	+ 2 65	16 1 03
	16	23 54 40				87 29 44 04	41 10	- 2 94	
	17	23 54 19				87 52 52 81	54 80	+ 1 99	16 0 57
	18	23 53 58				88 16 10 96	11 40	+ 0 44	16 3 72
	23	23 52 13 7	12 2 0 45	0 13	- 0 32				
	24	23 51 53				90 36 25 43	28 40	+ 2 97	16 3 44
	25	23 51 32				90 59 50 63	54 10	+ 3 47	16 2 00
	26	23 51 12				91 23 19 39	19 50	+ 0 11	16 2 30
	27	23 50 52							15 59 35
	28	23 50 32				92 10 6 66	8 60	+ 1 94	16 2 05
	29	23 50 13				92 33 33 21	31 50	- 1 71	16 0 25
Oct	1	23 49 34				93 20 10 18	12 20	+ 2 02	16 1 83
	2	23 49 16				93 43 29 13	29 00	- 0 13	16 2 05
	3	23 48 57				94 6 45 13	43 60	- 1 53	16 1 32
	6	23 48 3				95 16 11 19	7 50	- 3 69	16 3 38
	10	23 46 57 3	13 3 44 54	44 67	+ 0 13	96 47 40 82	41 90	+ 1 08	16 1 92
	11	23 46 42				97 10 22 26	23 00	+ 0 74	16 3 85
	12	23 46 27 4	13 11 7 65	7 56	- 0 09	97 32 55 41	58 20	+ 2 79	16 1 85
	15	23 45 46				98 39 6 89	5 70	- 1 19	15 59 85
	16	23 45 34				99 2 11 08	14 20	+ 3 12	16 3 81
	17	23 45 21 4	13 29 44 18	44 40	+ 0 22	99 24 16 33	14 90	- 1 43	16 0 83
	20	23 44 49				100 29 26 18	27 40	+ 1 22	15 58 79
	21	23 44 40				100 50 54 18	53 40	- 0 78	
	22	23 44 31				101 12 7 77	9 70	+ 1 93	16 2 29
	23	23 44 22 9	13 52 24 89	25 14	+ 0 25	101 33 15 02	16 00	+ 0 98	16 3 55
	24	23 44 15 7	13 56 14 26	14 32	+ 0 06	101 54 13 99	11 70	- 2 29	15 57 31
	25	23 44 9				102 14 55 57	56 40	+ 0 83	16 1 57
	30	23 43 47				103 56 42 69	41 30	- 1 39	
	31	23 43 45				104 15 13 20	11 70	- 1 50	16 2 52
Nov	2	23 43 42 4	14 31 9 76	9 75	- 0 01	104 53 33 09	30 60	- 2 49	16 2 30
	6	23 43 47 6	14 47 1 11	1 36	+ 0 25	106 7 9 78	10 40	+ 0 62	16 0 61
	7	23 43 51				106 24 54 68	56 00	+ 1 32	15 59 90
	8	23 43 55 4	14 55 2 17	2 16	- 0 01	106 42 24 73	25 10	+ 0 37	16 0 64

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (*Continued*)

M S l T m f	A R from	A R fr m	E f N A	N P D f m	N P D	Err f N A	M
Ob t i	Ob r v t i	N A		Ob r v t	fr m N A		H S mid
1843							
N 11 23 44 13 6	15 7 10 12	9 78	-0 34	107 33 12 35	8 90	-3 45	16 0 16
13 23 44 30				108 5 24 89	28 20	+3 31	16 2 05
14 23 44 39				108 21 9 36	9 70	+0 34	16 1 23
15 23 44 49				108 36 30 74	33 00	+2 26	16 0 59
16 23 45 1				108 51 32 61	34 00	+1 39	16 1 21
17 23 45 12 5	15 31 48 43	48 46	+0 03	109 6 14 33	16 20	+1 87	16 1 55
18 23 45 25 5	15 35 58 01	57 90	-0 11	109 20 35 63	37 90	+2 27	16 2 63
19 23 45 39				109 34 38 98	38 70	-0 28	16 1 75
22 23 46 24 9	15 52 43 84	44 01	+0 17	110 14 29 94	31 60	+1 66	16 1 43
23 23 46 42 2	15 56 57 69	57 54	-0 15	110 27 3 92	4 80	+1 58	16 2 75
24 23 47 0				110 39 13 53	15 10	+1 87	15 58 50
25 23 47 18				110 51 3 82	2 80	-1 02	15 58 73
26 23 47 36 8	16 9 42 17	42 64	+0 47	111 2 29 55	26 90	-2 65	16 2 31
27 23 47 56 7	16 13 58 62	59 13	+0 51	111 13 27 36	27 00	-0 36	16 0 68
28 23 48 17 8	16 18 16 33	16 31	-0 02	111 24 2 84	3 10	+0 26	16 1 28
Dec 7 23 51 51				112 40 34 66	37 50	+2 84	
8 23 52 17 0	17 1 41 71	42 07	+0 36	112 46 59 28	57 60	-1 68	16 1 95
9 23 52 44 2	17 6 5 56	5 55	-0 01				15 59 90
10 23 53 11				112 58 14 76	16 90	+2 14	
11 23 53 39				113 3 15 43	15 80	+0 37	
12 23 54 7 1	17 19 18 40	18 69	+0 29	113 7 47 09	47 10	+0 01	16 1 25
13 23 54 36				113 11 52 28	50 90	-1 38	
16 23 56 3				113 21 17 57	1 20	-2 37	16 0 65
18 23 57 2 5	17 45 53 74	53 62	-0 12	113 25 10 89	11 00	+0 11	16 3 7
19 23 57 32				113 26 26 32	26 60	+0 28	16 1 47
20 23 58 2				113 27 14 24	13 90	-0 34	16 1 05
21 23 58 32 3	17 59 13 52	13 58	+0 06	113 27 32 94	32 80	-0 14	16 1 20
22 23 59 2 9	18 3 40 61	40 33	-0 28	113 27 23 54	23 40	-0 14	16 2 10
23 23 59 32 7	18 8 7 11	7 09	-0 02	113 26 42 16	45 70	+3 24	15 59 95
26 0 0 32 6	18 17 0 19	0 43	+0 24	113 24 7 97	5 40	-2 57	16 2 65
27 0 1 2 6	18 21 26 88	26 93	+0 05	113 22 2 39	2 90	+0 51	16 1 12
29 0 2 2				113 16 35 01	33 60	-1 41	16 3 88
30 0 2 31 1	18 34 45 33	45 34	+0 01	113 13 6 84	6 80	-0 04	
31 0 3 0 2	18 39 11 08	11 01	-0 07	113 9 11 60	12 20	+0 60	16 4 36
1844							
J 2 0 3 57 5	18 48 1 69	1 47	-0 22	112 59 59 94	59 60	-0 34	
3 0 4 25 2	18 52 26 01	26 18	+0 17	112 54 42 73	42 20	-0 53	16 2 75
4 0 4 53 2	18 56 50 58	50 51	-0 07	112 49 0 21	57 30	-2 91	16 2 81
5 0 5 20 7	19 1 14 73	14 46	-0 27				16 2 75
6 0 5 46 8	19 5 37 51	37 97	+0 46	112 36 6 27	6 20	-0 07	16 3 20
7 0 6 13 6	19 10 0 97	1 03	+0 06	112 29 1 87	0 30	-1 57	16 1 15
8 0 6 39 7	19 14 23 66	23 63	-0 03	112 21 26 17	27 80	+1 63	
9 0 7 5 3	19 18 45 86	45 74	-0 12	112 13 27 05	28 80	+1 75	
10 0 7 29 5	19 23 6 93	7 33	+0 40	112 5 2 95	3 60	+0 65	16 3 88
11 0 7 54 7	19 27 28 61	28 39	-0 22	111 56 12 58	12 40	-0 18	16 1 90
12 0 8 18 3	19 31 48 86	48 87	+0 01				
13 0 8 41 6	19 36 8 73	8 76	+0 03	111 37 11 83	13 20	+1 37	16 1 80
17 0 10 8 6	19 53 22 24	22 10	-0 14	110 54 11 96	15 20	+3 24	16 2 25
18 0 10 29				110 42 29 44	30 10	+0 66	16 0 70
19 0 10 47 9	20 1 54 76	54 70	-0 06	110 30 19 33	21 30	+1 97	16 2 21
20 0 11 6 4	20 6 9 84	9 91	+0 07	110 17 48 14	49 40	+1 26	16 2 10
21 0 11 24				110 4 51 13	54 50	+3 37	
22 0 11 41 9							16 0 12
23 0 11 57 8	20 18 51 00	51 00	0 00				16 4 21
24 0 12 13 1	20 23 2 87	3 12	+0 25	109 23 58 17	56 40	-1 77	16 1 41
25 0 12 27 8	20 27 14 29	14 43	+0 14	109 9 35 67	33 90	-1 77	16 3 02
26 0 12 41 9	20 31 24 95	24 92	-0 03	108 54 47 86	50 30	+2 44	16 2 21
27 0 12 55 0	20 35 34 70	34 60	-0 10	108 39 44 81	46 10	+1 29	16 1 55

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN CENTER (*C ni nud*)

M an S lar Tlm f				A R f m		A R f m		Er f N A		N P D fr m		N P D		Er f N A		M an	
Obsevr ti				Ob ti		N A				Ob rv ti		from N A				H S mid	
1844				m												/	
Jan	28	0	13 75	20 39 43 70	43 44	— 0 26	108 24 20 52	21 60	+ 1 08	16	3 27						
	29	0	13 18 5	20 43 51 28	51 43	+ 0 15	108 8 36 98	37 50	+ 0 52								
	30	0	13 29 1	20 47 58 54	58 59	+ 0 05	107 52 35 36	33 90	— 1 46								
Feb	3	0	14 30	21 4 18 58	18 86	+ 0 28	106 45 8 48	12 80	+ 4 32								
	5	0	14 15 3	21 12 24 14	24 01	— 0 13	106 9 45 34	45 70	+ 0 36	16	0 90						
	6	0	14 20 1	21 16 25 41	25 26	— 0 15	105 51 35 55	36 80	+ 1 25	16	3 12						
	7	0	14 24 2	21 20 26 14	25 92	— 0 22											
	9	0	14 30				104 55 32 05	33 90	+ 1 85	16	2 70						
	10	0	14 30 8	21 32 22 41	22 84	+ 0 43	104 36 16 93	22 20	+ 5 27								
	11	0	14 32				104 16 55 55	55 80	+ 0 25	16	1 70						
	12	0	14 32 2	21 40 16 89	16 90	+ 0 01	103 57 13 33	14 90	+ 1 57	16	2 46						
	13	0	14 32				103 37 18 92	20 30	+ 1 38								
	14	0	14 30 0	21 48 7 75	7 98	+ 0 23	103 17 8 77	12 20	+ 3 43								
	15	0	14 28 0	21 52 2 36	2 39	+ 0 03	102 56 50 18	51 10	+ 0 92								
	16	0	14 25 0	21 55 55 84	56 09	+ 0 25	102 36 14 96	17 40	+ 2 44	16	2 30						
	17	0	14 21 5	21 59 48 99	49 07	+ 0 08	102 15 28 28	31 50	+ 3 22	16	3 50						
	18	0	14 17 2	22 3 41 31	41 33	+ 0 02	101 54 33 88	34 00	+ 0 12	16	0 91						
	19	0	14 12 5	22 7 33 08	32 90	— 0 18	101 33 21 25	25 20	+ 3 95	16	4 01						
	20	0	14 6 6	22 11 23 75	23 78	+ 0 03	101 12 4 20	5 50	+ 1 30	16	0 72						
	21	0	14 0 2	22 15 13 91	13 98	+ 0 07	100 50 33 06	35 50	+ 2 44	16	2 6						
	22	0	13 53 5	22 19 3 73	3 51	— 0 22	100 28 54 61	55 50	+ 0 89	16	2 90						
	23	0	13 46				100 7 4 29	5 90	+ 1 61	16	2 92						
	24	0	13 37 0	22 26 40 34	40 60	+ 0 26	99 45 6 55	7 30	+ 0 75	16	3 35						
	25	0	13 28 2	22 30 28 08	28 20	+ 0 12	99 22 58 81	59 90	+ 1 09	16	3 00						
	26	0	13 18 8	22 34 15 12	15 18	+ 0 06	99 0 42 13	44 20	+ 2 07	16	2 35						
	27	0	13 8 7				98 38 17 13	20 60	+ 3 47	16	1 37						
	28	0	12 57 9	22 41 47 30	47 38	+ 0 08	98 15 48 43	49 60	+ 1 17	16	1 70						
	29	0	12 46 6	22 45 32 75	32 62	— 0 13	97 53 7 92	11 40	+ 3 48	16	2 10						
	Mar	1	0	12 34 7	22 49 17 08	17 34	+ 0 26	97 30 22 13	26 40	+ 4 27	16	59 46					
		2	0	12 22 6	22 53 1 61	1 54	— 0 07	97 7 33 19	35 10	+ 1 91	16	2 90					
		3	0	12 10				96 44 37 50	37 70	+ 0 20	16	0 48					
		4	0	11 56 3	23 0 28 35	28 41	+ 0 09	96 21 32 06	34 90	+ 2 84	16	2 39					
5		0	11 42 4	23 4 10 96	11 21	+ 0 25				16	3 50						
6		0	11 28 2	23 7 58 33	53 54	+ 0 21	95 35 14 49	13 70	— 0 79	16	3 41						
7		0	11 14				95 11 54 29	56 00	+ 1 71	16	2 67						
8		0	10 58 9	23 15 17 00	17 01	+ 0 01	94 48 33 48	34 10	+ 0 62	16	3 47						
9		0	10 44				94 25 7 23	8 50	+ 1 27	16	3 21						
10		0	10 28 0	23 22 39 18	39 05	— 0 13	94 1 39 09	39 40	+ 0 31	16	3 65						
11		0	10 11 9	23 26 19 38	19 57	+ 0 19	93 38 3 06	7 30	+ 4 24	16	3 16						
12		0	9 55 7	23 29 59 73	59 82	+ 0 09	93 14 29 88	32 50	+ 2 62	16	4 15						
13		0	9 39 2	23 33 39 78	39 78	0 00	92 50 51 73	55 30	+ 3 57								
14		0	9 22 3	23 37 19 44	19 48	+ 0 04	92 27 15 92	16 20	+ 0 28	16	2 52						
15		0	9 5 2	23 40 58 79	58 95	+ 0 16	92 3 33 51	35 60	+ 2 09	16	2 39						
16		0	8 47 8	23 44 37 93	38 20	+ 0 27	91 39 54 20	53 90	— 0 30	16	2 67						
17		0	8 30 7	23 48 17 36	17 25	— 0 11	91 16 10 58	11 40	+ 0 82	16	1 90						
18		0	8 13 1	23 51 56 17	56 11	— 0 06	90 52 27 86	28 50	+ 0 64	16	1 85						
19		0	7 55				90 28 43 6	45 60	+ 1 95	16	1 45						
20		0	7 37 2	23 59 13 25	13 36	+ 0 11	90 5 1 94	3 20	+ 1 26	16	3 12						
21		0	7 18 9	0 2 51 56	51 77	+ 0 21	89 41 19 38	21 50	+ 2 12	16	3 59						
22		0	7 1				89 17 41 72	41 00	— 0 72	16	1 63						
23		0	6 42 7	0 10 8 30	8 28	— 0 02	88 53 59 26	2 00	+ 2 74	16	1 81						
24		0	6 24 4	0 13 46 50	46 39	— 0 11	88 30 23 22	25 00	+ 1 78	16	3 28						
25		0	6 6				88 6 47 94	50 30	+ 2 36	16	1 85						
26		0	5 47 3	0 21 2 37	2 46	+ 0 09	87 43 16 72	18 00	+ 1 28	16	2 36						
27		0	5 28 7	0 24 40 36	40 45	+ 0 09	87 19 48 36	48 20	— 0 16	16	2 50						
28		0	5 10				86 56 21 32	23 20	+ 1 88	16	2 65						
29		0	4 51 8	0 31 56 31	56 43	+ 0 12	86 32 59 33	1 00	+ 1 67	16	1 15						

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (*C i d*)

Mean S i Time f	A R from	A R from	Err f N A	N P D fr m	N P D	Err f N A	Mean
Obsrv t	Obsrv i	N A		Obs t	fr m N A		H S mld
1844							
Mar 30 0 4 33.4	0 35 34.50	34 47	-0.03	86 9 40 19	42 80	+2.61	16 2 78
31 0 4 14.7	0 39 12.84	12 54	-0.30	85 46 24 91	29 00	+4.09	16 2 30
April 1 0 3 57				85 23 18 21	19 80	+1.59	16 3 65
2 0 3 38				85 0 12 20	15 60	+3.40	16 1 50
3 0 3 20				84 37 15 14	13 60	-1.54	16 1 21
4 0 3 2.3	0 53 45.88	45 97	+0.09	84 14 20 53	22 30	+1.77	16 2 19
5 0 2 45				83 51 35 21	36 00	+0.79	16 1 25
6 0 2 27				83 28 53 94	54 90	+0.96	16 1 08
7 0 2 10				83 6 18 30	20 40	+2.10	15 59 21
8 0 1 52							16 3 99
9 0 1 36				82 21 31 67	32 60	+0.93	16 0 04
10 0 1 18.8	1 15 41.48	41 66	+0.18	81 9 17 61	19 90	+2.29	16 2 01
11 0 1 2.4	1 19 21.55	21 86	+0.31	81 37 13 71	15 20	+1.49	16 0 10
13 0 0 31				80 53 30 89	30 90	+0.01	
14 0 0 15.6	1 30 24.21	24 37	+0.16	80 31 50 17	52 10	+1.93	16 1 25
15 0 0 1				80 10 18 70	22 50	+3.80	
15 23 59 45.9	1 37 47.57	47 79	+0.22	79 49 0 50	2 70	+2.20	16 1 63
16 23 59 32				79 27 49 15	53 10	+3.95	16 3 21
17 23 59 17.8	1 45 12.48	12 71	+0.23	79 6 51 25	53 80	+2.55	16 0 55
18 23 59 4.3	1 48 55.58	55 77	+0.19	78 46 4 52	5 20	+0.68	16 3 74
19 23 58 51.4	1 52 39.17	39 25	+0.08	78 25 28 62	27 70	-0.92	16 0 52
20 23 58 38.8	1 56 23.05	23 12	+0.07	78 4 59 66	1 80	+2.14	16 3 26
21 23 58 26.6	2 0 7.37	7 42	+0.05	77 44 45 23	47 60	+2.37	16 5 45
22 23 58 14				77 24 43 07	45 60	+2.43	16 1 66
23 23 58 3.8	2 7 37.61	37 38	-0.23	77 4 52 85	55 90	+3.05	16 1 40
24 23 57 52.6	2 11 22.91	23 00	+0.09	76 45 16 88	19 10	+2.22	16 2 78
25 23 57 42.2	2 15 9.02	9 12	+0.10	76 25 52 77	55 40	+2.63	16 3 41
26 23 57 32.3	2 18 55.67	55 72	+0.05	76 6 42 79	44 90	+2.11	16 1 90
27 23 57 22.9	2 22 42.86	42 81	-0.05	75 47 44 16	48 30	+4.14	16 0 67
28 23 57 14.0	2 26 30.43	30 40	-0.03	75 29 3 96	5 70	+1.74	16 2 05
29 23 57 5.6	2 30 18.54	18 50	-0.04	75 10 37 86	37 40	-0.46	16 3 02
30 23 56 57.6	2 34 7.07	7 10	+0.03	74 52 20 80	23 80	+3.00	
May 1 23 56 50.2	2 37 56.18	56 26	+0.08	74 34 23 05	25 00	+1.95	16 2 63
2 23 56 43.3	2 41 45.91	45 96	+0.05	74 16 37 81	41 60	+3.79	16 2 84
3 23 6 37.2	2 45 36.36	36 21	-0.15	73 59 14 64	13 60	-1.04	16 1 50
5 23 6 26.1	2 53 18.36	18 43	+0.07	73 25 4 21	5 40	+1.19	15 58 67
6 23 6 22				73 8 23 43	25 80	+2.37	15 59 87
9 23 56 11.6	3 8 0.07	49 90	-0.17	72 20 7 87	8 60	+0.73	16 2 07
10 23 56 9.3	3 12 44.28	44 24	-0.04	72 4 35 45	37 70	+2.25	15 59 07
11 23 56 8				71 49 27 89	24 70	-3.19	16 0 32
12 23 56 6.7	3 20 34.78	34 71	-0.07	71 34 26 28	30 00	+3.72	16 1 08
13 23 56 6.3	3 24 30.99	30 86	-0.13	71 19 55 41	53 80	-1.61	16 3 31
15 23 56 7.3	3 32 25.08	24 88	-0.20	70 51 37 83	38 30	+0.47	16 2 46
16 23 56 8.4	3 36 22.77	22 76	-0.01	70 37 57 83	59 50	+1.67	16 1 28
17 23 56 10.3	3 40 21.22	21 19	-0.03	70 24 38 57	40 40	+1.83	16 1 19
18 23 56 13				70 11 41 37	41 30	-0.07	16 1 59
19 23 56 16				69 59 2 53	2 30	-0.23	16 1 35
21 23 56 23.2	3 56 20.26	20 37	+0.11	69 34 43 97	46 10	+2.13	16 4 67
22 23 56 27.7	4 0 21.37	21 47	+0.10	69 23 8 32	9 30	+0.98	16 1 68
23 23 56 33				69 11 52 63	53 70	+1.07	16 0 82
24 23 56 38.2	4 8 24.90	25 17	+0.27	69 0 58 69	59 60	+0.91	16 3 19
25 23 56 44				68 50 26 24	27 10	+0.86	
27 23 56 58				68 30 30 46	28 00	-2.46	16 1 03
29 23 57 12.6	4 28 42.29	42 59	+0.30	68 11 59 24	58 00	-1.24	16 2 94
30 23 57 21				68 3 15 62	16 80	+1.18	16 3 81
31 23 57 29.8	4 36 52.63	52 61	-0.02	67 54 57 37	58 60	+1.23	15 59 23

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (Column d)

M	Solar Time	Right Ascension	Right Ascension	Error	North Polar Distance	North Polar Distance	Error	M
Ob	U	Ob	U	f N A	Ob	f m N A	f N A	H S mil
1844	m	m						
J	1 23 57 38.7	4 40 58.09	68 23	+ 0.14	67 47 0.89	3 30	+ 2.41	16 0.68
	2 23 57 48				67 39 29.72	31 20	+ 1.48	15 57.08
	3 23 57 58				67 32 22.57	22 50	- 0.07	16 3.07
	4 23 8 8.2	4 53 17.33	17 39	+ 0.06				16 2.87
	5 23 58 19				67 19 15.82	15 80	- 0.02	16 4.27
	6 23 58 29.5	5 1 31.81	31 93	+ 0.12	67 13 16.06	18 10	+ 2.04	16 3.43
	7 23 58 40.5	5 5 39.38	39 68	+ 0.30	67 7 45.07	44 30	- 0.77	16 1.07
	8 23 58 52.1	5 9 47.79	47 72	- 0.07				16 0.58
	9 23 59 3.9	5 13 56.06	56 03	- 0.03	66 57 49.56	49 00	- 0.56	16 3.85
	11 23 9 28				66 49 32.93	31 10	- 1.83	16 1.27
	12 23 59 40.4	5 26 22.51	22 36	- 0.15	66 45 57.14	58 80	+ 1.66	16 2.70
	13 23 59 53.2	5 30 31.63	31 52	- 0.11	66 42 50.77	51 10	+ 0.33	16 4.17
	15 0 0 5.6	5 34 40.56	40 83	+ 0.27	66 40 8.54	8 10	- 0.44	16 3.58
	16 0 0 18.6	5 38 50.30	50 26	- 0.04	66 37 45.40	49 60	+ 4.20	16 0.02
	18 0 0 44.3	5 47 9.09	9 36	+ 0.27	66 34 27.32	27 00	- 0.32	16 2.87
	19 0 0 57.3	5 51 18.67	18 99	+ 0.32	66 33 22.79	22 90	+ 0.11	16 3.34
	20 0 1 11				66 32 45.42	43 60	- 1.82	16 0.62
	22 0 1 37				66 32 38.59	39 30	+ 0.71	15 8 1
	25 0 2 14.8	6 16 15.84	16 02	+ 0.18	66 35 35.27	38 50	+ 3.23	
	26 0 2 28				66 37 27.16	27 60	+ 0.44	16 1.32
	27 0 2 39.9	6 24 34.05	34 18	+ 0.13	66 39 41.68	41 40	- 0.28	16 0.91
	28 0 2 52.0	6 28 42.82	43 00	+ 0.18	66 42 16.89	19 60	+ 2.71	16 2.87
	29 0 3 4.1	6 32 51.39	51 63	+ 0.24	66 45 24.84	22 50	- 2.34	16 3.85
J ly	1 0 3 27.4	6 41 7.99	8 24	+ 0.25	66 52 41.59	41 20	- 0.39	16 4.29
	3 0 3 50.2	6 49 23.96	23 83	- 0.13	67 1 36.43	37 10	+ 0.67	16 3.01
	4 0 4 0.9	6 53 31.23	31 21	- 0.02	67 6 42.55	41 20	- 1.35	16 0.57
	5 0 4 11.2	6 57 38.03	38 28	+ 0.25	67 12 8.36	9 10	+ 0.74	16 0.29
	6 0 4 22				67 18 3.86	0 90	- 2.96	16 1.5
	8 0 4 41							15 59.22
	9 0 4 50				67 37 56.6	58 00	+ 1.44	16 1.43
	11 0 5 7				67 53 11.27	12 30	+ 1.03	
	14 0 5 29				68 18 54.43	54 60	+ 0.17	
	15 0 5 35.8	7 38 28.50	28 59	+ 0.09	68 28 14.18	13 50	- 0.68	16 4.27
	16 0 5 41.7	7 42 30.93	31 17	+ 0.24	68 37 53.6	54 40	+ 0.84	
	21 0 6 4				69 31 39.52	40 40	+ 0.88	15 59.78
	22 0 6 6.6	8 6 35.23	35 27	+ 0.04	69 44 28.59	28 20	- 0.39	16 2.32
	25 0 6 11.0	8 18 29.42	29 47	+ 0.05	70 20 51.83	52 60	+ 0.77	16 2.10
	27 0 6 11.2	8 26 22.70	22 58	- 0.12	70 47 29.60	26 90	- 2.70	16 2.32
	28 0 6 10				71 1 15.65	12 70	- 2.95	16 3.99
	29 0 6 8.8	8 34 13.36	13 26	- 0.10	71 15 17.33	17 20	- 0.13	16 3.22
	30 0 6 6				71 29 43.96	40 40	- 3.56	16 3.01
A	1 0 6 1				71 59 22.26	21 10	- 1.16	
	2 0 5 57				72 14 34.17	38 10	+ 3.93	16 0.95
	3 0 5 52.2	8 53 39.51	39 44	- 0.07	72 30 11.66	12 40	+ 0.74	
	4 0 5 47.0	8 57 30.93	30 90	- 0.03	72 46 4.50	4 00	- 0.50	16 0.42
	5 0 5 41.7	9 1 22.06	21 77	- 0.29	73 2 13.14	12 60	- 0.54	1 9 6
	6 0 5 35.1	9 5 12.04	12 06	+ 0.02	73 18 38.0	37 60	- 0.45	16 1.2
	7 0 5 28				73 35 16.71	18 90	+ 2.19	15 9.35
	8 0 5 20.7	9 12 50.73	50 94	+ 0.21	73 52 13.33	16 30	+ 2.97	16 2.26
	9 0 5 13				74 9 30.40	29 30	- 1.10	16 0.33
	10 0 5 4				74 26 56.86	7 70	+ 0.84	15 58.32
	11 0 4 55				74 44 39.79	41 10	+ 1.31	15 58.86
	12 0 4 46				7 2 36.4	39 20	+ 2.75	15 59.73
	13 0 4 36				75 20 50.41	51 50	+ 1.09	16 1.24
	14 0 4 24.7	9 3 33.85	34 08	+ 0.23	75 39 16.91	18 00	+ 1.09	15 8.39
	16 0 4 2				76 16 50.11	51 70	+ 1.59	16 2.39
	17 0 3 49.9	9 46 48.68	48 30	- 0.38	6 35 56.44	58 20	+ 1.76	15 59 1

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (Continued)

Mean S I T m f Obsrv tl	A R fr m Ob	A R fr m N A	Dr f N A	N P D fr m Observati	N P D fr m N A	Err f N A	Mean H S m d
1844							
A g 18 0 3 36 7	9 50 31 98	32 00	+ 0 02	76 55 17 54	17 40	- 0 14	16 0 20
19 0 3 23				77 14 47 58	49 00	+ 1 42	16 0 75
20 0 3 10				77 34 34 35	32 50	- 1 85	
23 0 2 25				78 34 51 04	52 40	+ 1 36	16 0 04
24 0 2 9				78 55 19 21	21 10	+ 1 89	16 0 57
31 23 59 49				81 45 1 43	2 10	+ 0 67	16 0 44
S pt. 2 23 59 11				82 28 55 50	54 10	- 1 40	16 3 03
3 23 58 52				82 50 58 84	1 50	+ 2 66	
4 23 58 32				83 13 15 09	16 00	+ 0 91	16 1 04
5 23 58 12 2	11 0 1 20	1 20	0 00	83 35 32 98	37 20	+ 4 22	16 2 81
6 23 57 52 1	11 3 37 58	37 63	+ 0 05	83 58 3 56	4 90	+ 1 34	16 4 14
8 23 57 11 1	11 10 49 62	49 97	+ 0 35	84 43 19 06	18 40	- 0 66	16 1 00
9 23 56 50 7	11 14 2 54	25 92	+ 0 28	85 6 3 94	3 30	- 0 64	
10 23 56 30 4	11 18 1 90	1 75	- 0 15	85 28 51 68	53 40	+ 1 72	16 1 15
11 23 56 9 3	11 21 37 21	37 47	+ 0 26	85 51 46 70	48 20	+ 1 50	16 0 75
12 23 55 48 7	11 25 13 10	13 11	+ 0 01	86 14 47 82	47 40	- 0 42	16 4 03
13 23 55 27 4	11 28 48 32	48 66	+ 0 34	86 37 49 39	50 60	+ 1 21	
14 23 55 7				87 0 56 83	57 40	+ 0 57	16 1 08
17 23 54 3 4	11 43 10 30	10 47	+ 0 17	88 10 35 25	36 40	+ 1 15	16 2 99
18 23 53 42 1	11 46 45 49	45 90	+ 0 41	88 33 54 97	54 40	- 0 57	16 1 41
19 23 53 21 4	11 50 21 32	21 37	+ 0 05	88 57 17 65	14 30	- 3 35	16 2 16
20 23 53 0 3	11 53 56 57	56 84	+ 0 27	89 20 37 79	35 90	- 1 89	16 1 33
21 23 52 39 6	11 57 32 35	32 42	+ 0 07	89 43 59 99	58 70	- 1 29	16 0 00
23 23 51 57 8	12 4 43 71	43 89	+ 0 18	90 30 46 27	46 90	+ 0 63	
24 23 51 37 1	12 8 19 51	19 82	+ 0 31	90 54 10 24	11 70	+ 1 40	16 4 57
25 23 51 16 6	12 11 5 56	55 92	+ 0 36	91 17 34 6 5	36 20	+ 1 55	16 2 10
26 23 50 56 5	12 15 31 84	32 19	+ 0 35	91 40 59 87	0 60	+ 0 73	16 2 83
28 23 50 17 0	12 22 45 38	45 39	+ 0 01	92 27 45 54	46 90	+ 1 36	16 1 80
29 23 49 57 3	12 26 22 16	22 38	+ 0 22	92 51 10 05	8 0	- 1 55	16 3 47
30 23 49 38 2	12 29 59 56	59 64	+ 0 08	93 14 27 43	28 30	+ 0 87	16 1 79
Oct 3 23 48 43				94 24 12 46	14 00	+ 1 54	16 3 38
9 23 47 1 5	13 2 51 31	51 36	+ 0 05	96 42 10 07	12 00	+ 1 93	16 4 10
11 23 46 32				97 27 32 45	32 50	+ 0 05	16 0 97
13 23 46 4				98 12 26 69	28 40	+ 1 71	16 0 02
14 23 45 50 0	13 21 22 40	22 67	+ 0 27	98 34 46 59	46 10	- 0 49	16 4 57
16 23 45 25 4	13 28 50 84	50 97	+ 0 13	99 18 58 06	59 10	+ 1 04	16 3 17
17 23 45 13 9	13 32 35 93	35 99	+ 0 06	99 40 52 47	53 50	+ 1 03	16 4 18
18 23 45 3 2	13 36 21 68	21 60	- 0 08	100 2 37 68	39 50	+ 1 82	16 2 32
19 23 44 3				100 24 19 19	16 40	- 2 79	16 4 97
20 23 44 42 9	13 43 54 3 5	54 67	+ 0 32	100 45 41 89	44 10	+ 2 21	16 2 26
21 23 44 34 0	13 47 42 03	42 18	+ 0 15	101 7 3 77	2 10	- 1 67	16 4 57
22 23 44 25 9	13 51 30 54	30 34	- 0 20	101 28 11 87	10 10	- 1 77	16 3 65
23 23 44 18 0	13 55 19 09	19 19	+ 0 10	101 49 6 86	7 70	+ 0 84	16 2 10
24 23 44 10 9	13 59 8 54	8 74	+ 0 20	102 9 52 10	54 50	+ 2 40	16 6 12
25 23 44 4 5	14 2 58 70	59 00	+ 0 30	102 30 31 15	30 00	- 1 1	16 3 47
27 23 43 54 5	14 10 41 79	41 75	- 0 04	103 11 5 62	5 90	+ 0 28	16 3 54
28 23 43 49 9	14 14 33 74	34 27	+ 0 53				
30 23 43 44 6	14 22 21 57	21 64	+ 0 07	104 10 26 10	26 00	- 0 10	16 5 92
31 23 43 43 4	14 26 16 07	16 54	+ 0 47	104 29 46 29	46 10	- 0 19	16 0 87
N v 1 23 43 42				104 48 48 73	52 20	+ 3 47	16 3 07
2 23 43 42 4	14 34 8 95	8 81	- 0 14	105 7 43 44	43 90	+ 0 46	16 4 74
5 23 43 47				106 2 47 53	48 70	+ 1 17	16 2 74
6 23 43 51				106 20 40 51	38 80	- 1 71	16 1 83
7 23 43 55				106 38 12 97	12 40	- 0 57	16 1 97
8 23 43 59 7	14 58 5 78	5 94	+ 0 16	106 55 30 74	29 10	- 1 64	16 1 61
9 23 44 5 9	15 2 8 46	8 44	- 0 02	107 12 26 18	28 50	+ 2 32	

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER, (Continued)

Mean Solar Time of Observation	A R from Observation	A R from N A	Err. from N A	N P D from Observation	N P D from N A	Err. from N A	M H S mid
1844							
Nov							
11 23 44 20.5	15 10 16.19	16 02	-0.17	107 45 32.64	33 70	+1.06	16 5.25
13 23 44 38.0	15 18 26.86	26 97	+0.11	108 17 26.25	24 70	-1.55	16 2.92
14 23 44 48.1	15 22 33.52	33 70	+0.18				
15 23 44 59.6	15 26 41.55	41 28	-0.27	108 47 58.98	58 40	-0.58	16 4.23
18 23 45 37.1	15 39 8.87	8 84	-0.03	109 31 16.28	17 00	+0.72	16 2.90
19 23 45 51.8	15 43 20.11	19 66	-0.45	109 45 1.49	1 30	-0.19	16 3.61
20 23 46 6.5	15 47 31.41	31 26	-0.15	109 58 21.19	24 00	+2.82	16 2.57
21 23 46 22.5	15 51 44.10	43 66	-0.44	110 11 22.29	24 60	+2.31	16 5.87
22 23 46 38.5	15 55 56.59	56 83	+0.24	110 24 2.88	3 00	+0.12	16 3.14
24 23 47 14.1	16 4 25.48	25 45	-0.03	110 48 10.51	11 60	+1.09	
25 23 47 33.1	16 8 41.00	40 91	-0.09	110 59 39.63	41 00	+1.37	
26 23 47 53				111 10 44.76	46 90	+2.14	16 2.57
27 23 48 12.7	16 17 13.81	14 02	+0.21	111 21 28.82	28 80	-0.02	16 3.45
28 23 48 33.8	16 21 31.54	31 66	+0.12	111 31 47.06	46 40	-0.66	16 3.52
29 23 48 55.1	16 25 49.54	49 99	+0.45	111 41 39.28	39 50	+0.22	16 4.23
30 23 49 18.3	16 30 9.27	8 99	-0.28	111 51 8.93	7 70	-1.23	16 2.86
Dec							
1 23 49 41.5	16 34 29.04	28 67	-0.37	112 0 11.75	10 70	-1.05	16 1.62
2 23 50 4.6	16 38 48.83	48 99	+0.16	112 8 49.68	48 30	-1.38	16 3.2
3 23 50 28.8	16 43 9.59	9 92	+0.33	112 16 58.72	0 20	+1.48	16 6.62
4 23 50 53.8	16 47 31.21	31 42	+0.21	112 24 45.69	46 00	+0.31	16 2.88
5 23 51 19.2	16 51 53.20	53 50	+0.30	112 32 2.13	5 70	+3.57	16 6.17
8 23 52 39				112 51 23.86	25 10	+1.24	
10 23 53 33.7	17 13 51.04	51 32	+0.28	113 2 4.44	2 90	-1.54	16 2.52
11 23 54 2.0	17 18 15.87	16 11	+0.24	113 6 42.10	39 80	-2.30	16 1.93
12 23 54 31				113 10 53.90	51 10	-2.80	
15 23 55 58				113 20 32.08	35 10	+3.02	16 1.7
21 23 58 56				113 27 28.19	24 80	-3.39	16 3.44
23 23 59 56				113 25 51.06	5 20	+4.14	16 2.28
1845							
Jan.							
2 0 4 18.8	18 51 22.27	22 26	-0.01	112 5 58.42	58 40	-0.02	16 8.16
5 0 5 41.5	19 4 34.73	34 78	+0.05	112 37 39.43	40 70	+0.27	16 1.91
8 0 7 1				112 15 19.54	20 70	+1.16	
9 0 7 26				112 7 2.34	1 30	-1.04	16 4.4
10 0 7 50.7	19 26 27.00	26 57	-0.43	111 58 16.06	16 10	+0.04	16 3.19
11 0 8 14.3	19 30 47.18	47 30	+0.12	111 49 3.82	5 00	+1.18	16 2.77
12 0 8 38.1	19 35 7.65	7 40	-0.25	111 39 31.09	28 60	-2.49	16 3.36
13 0 9 1.0	19 39 27.13	26 88	-0.25	111 29 28.02	27 10	-0.92	16 3.27
15 0 9 45.1	19 48 4.04	13 81	-0.23	111 8 9.00	9 90	+0.90	16 6.98
16 0 10 5.2	19 52 21.23	21 25	+0.02	110 56 53.60	54 80	+1.20	16 3.14
17 0 10 25.2	19 56 37.85	37 96	+0.11	110 45 16.65	15 90	-0.75	16 2.72
18 0 10 44.9	20 0 54.08	53 94	-0.14	110 33 12.23	13 40	+1.17	16 0.2
19 0 11 3.7	20 5 9.55	9 16	-0.39	110 20 45.96	47 70	+1.74	15 59.73
20 0 11 20.8	20 9 23.34	23 63	+0.29	110 8 0.17	59 20	-0.97	16 0.83
21 0 11 38.4	20 13 37.47	37 35	-0.12	109 54 50.48	48 00	-2.48	16 1.92
22 0 11 54.2	20 17 50.16	50 27	+0.11	109 41 14.04	14 50	+0.46	16 3.10
23 0 12 10.3	20 22 2.50	2 40	-0.10				
24 0 12 25.0	20 26 13.78	13 76	-0.02	109 13 8.09	2 30	-0.79	16 4.24
25 0 12 38.7	20 30 23.99	24 31	+0.32	108 58 24.01	24 30	+0.29	16 2.70
26 0 12 52.4	20 34 34.33	34 07	-0.26	108 43 26.03	25 40	-0.63	16 3.85
27 0 13 4.7	20 38 43.28	43 04	-0.24	108 28 6.45	6 10	-0.3	16 4.67
28 0 13 15.8	20 42 51.09	51 19	+0.10	108 12 28.06	26 80	-1.26	16 3.32
29 0 13 26.5	20 46 58.48	58 54	+0.06	107 56 27.56	27 70	+0.14	16 3.43
30 0 13 36.6	20 51 5.06	5 10	+0.04	107 40 9.58	9 30	-0.28	16 4.17
31 0 13 45.6	20 55 10.49	10 83	+0.34	107 23 32.32	32 00	-0.32	16 5.12
Feb							
1 0 13 54.0	20 59 15.54	15 77	+0.23	107 6 35.65	36 20	+0.55	16 5.18
2 0 14 1.8	21 3 19.99	19 91	-0.08	106 49 23.75	22 30	-1.4	16 5.27
3 0 14 9				106 31 52.31	50 80	-1.51	16 6.81

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER, (Continued)

M an S l Tim f	A R from	A R fr m	Er f N A	N P D f m	N P D	Erro f N A	M an
Obs rv ti	Ob at	N A		Ob rvati	from N A.		H Semid
1845	m					/	"
Feb 5 0 14 19.2	21 15 27.06	27 43	+ 0.37	105 55 54.85	56 40	+ 1.55	16 5.90
6 0 14 24.1	21 19 28.47	28 31	- 0.16	105 37 34.49	34 40	- 0.09	16 3.21
7 0 14 27.2	21 23 28.09	28 39	+ 0.30	105 18 56.90	56 50	- 0.40	16 5.18
8 0 14 29.9	21 27 27.37	27 68	+ 0.31				
9 0 14 32.2	21 31 26.14	26 15	+ 0.01	104 40 53.10	54 50	+ 1.40	16 4.27
10 0 14 33.2	21 35 23.85	23 84	- 0.01	104 21 31.81	31 30	- 0.51	16 5.43
11 0 14 33.4	21 39 20.50	20 72	+ 0.22	104 1 52.35	53 90	+ 1.55	16 4.70
12 0 14 32.9	21 43 16.60	16 81	+ 0.21	103 42 4.42	2 70	- 1.72	16 5.99
13 0 14 32				103 21 56.48	58 20	+ 1.72	
14 0 14 29.3	21 51 6.06	6 67	+ 0.61	103 1 39.04	40 80	+ 1.76	16 4.01
15 0 14 26.8	21 55 0.10	0 44	+ 0.34	102 41 12.88	10 90	- 1.98	16 3.61
16 0 14 23.6	21 58 53.58	53 48	- 0.10	102 20 24.90	28 80	+ 3.90	16 6.34
17 0 14 19.1	22 2 45.56	45 77	+ 0.21	101 59 35.32	35 10	- 0.22	16 2.77
18 0 14 14.1	22 6 37.11	37 35	+ 0.24	101 38 29.53	30 00	+ 0.47	16 2.08
19 0 14 8.8	22 10 28.29	28 22	- 0.07	101 17 12.07	14 00	+ 1.93	16 3.97
20 0 14 1.9	22 14 17.9	18 39	+ 0.44	100 55 47.12	47 50	+ 0.38	16 5.92
21 0 13 54.9	22 18 7.60	7 92	+ 0.32	100 34 12.13	10 90	- 1.23	16 2.01
22 0 13 48				100 12 21.33	24 50	+ 3.17	
23 0 13 39				99 50 30.66	28 80	- 1.86	16 4.03
24 0 13 30.4	22 29 32.62	32 65	+ 0.03	99 28 21.67	24 20	+ 2.53	16 4.87
25 0 13 20.5	22 33 19.44	19 69	+ 0.25	99 6 11.43	10 90	- 0.53	16 2.74
26 0 13 10.7	22 37 6.04	6 16	+ 0.12	98 43 48.01	49 50	+ 1.49	16 4.97
27 0 12 59.9	22 40 51.81	52 07	+ 0.26	98 21 18.00	20 20	+ 2.20	16 3.43
28 0 12 49.0	22 44 37.32	37 4	+ 0.13	97 58 40.47	43 50	+ 3.03	16 5.13
Mr 1 0 12 36.9	22 48 21.84	22 34	+ 0.50	97 35 58.57	59 80	+ 1.23	16 5.07
2 0 12 25.3	22 52 6.82	6 71	- 0.11	97 13 6.56	9 40	+ 2.84	16 5.07
3 0 12 12.0	22 55 50.01	50 62	+ 0.61	96 50 8.35	12 80	+ 4.45	16 3.92
4 0 11 59.3	22 59 33.62	34 06	+ 0.44	96 27 10.01	10 50	+ 0.49	16 3.68
5 0 11 45.6	23 3 16.55	17 06	+ 0.51	96 4 3.06	2 60	- 0.46	16 4.65
6 0 11 31.7	23 6 59.17	59 64	+ 0.47				16 1.42
7 0 11 17.2	23 10 41.21	41 81	+ 0.60	95 17 35.04	32 50	- 2.54	16 5.58
8 0 11 2.9	23 14 23.26	23 58	+ 0.32	94 54 13.15	11 00	- 2.15	16 4.78
9 0 10 47.5	23 18 4.45	4 97	+ 0.52	94 30 45.34	45 70	+ 0.36	16 4.67
10 0 10 32.1	23 21 45.66	46 02	+ 0.36	94 7 14.80	17 00	+ 2.20	16 3.45
11 0 10 16.3	23 25 26.34	26 71	+ 0.37	93 43 46.08	45 30	- 0.78	16 2.00
12 0 10 0.1	23 29 6.69	7 08	+ 0.39	93 20 9.17	11 00	+ 1.83	16 2.81
15 0 9 10				92 9 18.12	16 60	- 1.5	16 4.78
16 0 8 53							16 2.23
17 0 8 35.4	23 47 24.49	24 61	+ 0.12	91 21 53.76	54 20	+ 0.44	16 5.67
19 0 7 59.4	23 54 41.48	41 99	+ 0.51	90 34 29.69	30 60	+ 0.91	16 3.57
20 0 7 41.2	23 58 19.77	20 40	+ 0.63	90 10 50.76	49 10	- 1.66	16 2.83
21 0 7 23.5	0 1 58.62	58 69	+ 0.07	89 47 6.81	8 30	+ 1.49	16 5.6
22 0 7 5.1	0 5 36.74	36 84	+ 0.10	89 23 28.08	28 50	+ 0.42	16 2.87
23 0 6 46.7	0 9 14.87	14 91	+ 0.04	88 59 49.87	50 10	+ 0.23	16 4.27
24 0 6 27.8	0 12 52.43	52 88	+ 0.45	88 36 13.02	13 40	+ 0.38	16 4.58
25 0 6 9.2	0 16 30.44	30 81	+ 0.37	88 12 38.56	38 70	+ 0.14	16 4.07
26 0 5 50.9	0 20 8.64	8 72	+ 0.08	87 49 6.81	6 40	- 0.41	16 6.65
27 0 5 32.3	0 23 46.49	46 63	+ 0.14	87 25 36.05	36 90	+ 0.8	16 6.05
29 0 4 55.3	0 31 2.43	2 55	+ 0.12	86 38 45.25	47 10	+ 1.85	16 2.52
30 0 4 36.5	0 34 40.20	40 58	+ 0.38	86 15 30.85	27 70	- 3.15	
31 0 4 18.1	0 38 18.23	18 71	+ 0.48	85 52 11.67	12 30	+ 0.63	16 3.57
Apr 1 1 0 3 59.8	0 41 56.41	56 94	+ 0.53	85 29 1.12	1 40	+ 0.28	16 2.28
2 0 3 41.5	0 45 34.72	35 30	+ 0.58	85 5 54.10	55 30	+ 1.20	16 4.63
3 0 3 23.5	0 49 13.25	13 81	+ 0.56	84 42 54.87	54 40	- 0.47	16 6.59
4 0 3 5.8	0 52 52.06	52 47	+ 0.41	84 20 0.87	59 80	- 1.07	16 5.63
5 0 2 48.6	0 56 31.2	31 30	+ 0.05	83 57 7.46	9 40	+ 1.94	16 4.81
6 0 2 31.2	1 0 10.43	10 31	- 0.12	83 34 24.05	26 10	+ 2.05	16 5.37

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (*C n t n u d*)

M S lar T m f Ob erv ti			A R fr m Ob ti	A R f m N A	Err f N A	N P D fr m Ob rv ti	N P D fr m N A	Err f N A	M an H S mid
1845									
April	7	0 2 13 9	1 3 49 65	49 54	-0 11	83 11 50 12	49 30	-0 82	16 7 37
	8	0 1 56 5	1 7 28 73	28 99	+0 26	82 48 16 62	19 60	+2 98	16 7 78
	9	0 1 39 8	1 11 8 58	8 67	+0 09	82 26 58 91	57 20	-1 71	16 6 65
	10	0 1 23 4	1 14 48 56	48 58	+0 02	82 4 42 64	42 50	-0 14	16 4 43
	11	0 1 6 8	1 18 28 53	28 75	+0 22	81 42 35 73	35 80	+0 07	16 4 72
	12	0 0 51 1	1 22 9 44	9 20	-0 24	81 20 39 21	37 40	-1 81	16 3 38
	13	0 0 35 0	1 25 49 83	49 93	+0 10	80 58 45 22	47 80	+2 58	16 2 17
	14	0 0 19 5	1 29 30 73	30 98	+0 25	80 37 6 46	7 30	+0 84	16 2 92
	15	0 0 4 4	1 33 12 25	12 33	+0 08	80 15 34 82	36 10	+1 28	16 3 06
	15	23 59 49 5	1 36 53 87	54 03	+0 16	79 54 12 71	14 70	+1 99	16 2 67
	16	23 59 34 8	1 40 35 69	36 07	+0 38	79 33 1 74	3 20	+1 46	16 2 52
	17	23 59 20 7	1 44 18 02	18 49	+0 47	79 12 5 98	2 20	-3 78	16 3 41
	18	23 59 7 3	1 48 1 20	1 27	+0 07	78 51 12 57	11 90	-0 67	15 59 27
	19	23 58 54 2	1 51 44 54	44 47	-0 07	78 30 30 97	32 50	+1 53	16 3 85
	20	23 58 40 9	1 55 27 77	28 08	+0 31	78 10 2 25	4 40	+2 15	16 1 08
	21	23 58 28 1	1 59 11 57	12 13	+0 56	77 49 46 56	47 90	+1 34	16 5 08
	22	23 58 16 4	2 2 56 30	56 60	+0 30	77 29 42 51	43 40	+0 89	16 2 63
	23	23 58 5 1	2 6 41 53	41 56	+0 03	77 9 51 71	51 10	-0 61	16 4 92
	24	23 57 54 2	2 10 27 10	27 00	-0 10	76 50 11 23	11 40	+0 17	16 3 83
	25	23 57 43 4	2 14 12 87	12 95	+0 08	76 30 44 67	44 40	-0 27	16 2 52
	26	23 57 33 3	2 17 59 32	59 39	+0 07				
	27	23 57 23 9	2 21 46 31	46 35	+0 04	75 52 30 11	30 60	+0 49	16 6 0
	28	23 57 14 8	2 25 33 78	33 86	+0 08	75 33 43 48	44 30	+0 82	16 4 93
	29	23 57 6 3	2 29 21 82	21 91	+0 09	75 15 8 64	12 00	+3 36	16 8 68
	30	23 56 58 3	2 33 10 31	10 50	+0 19	74 56 53 78	54 30	+0 52	16 3 52
M y	1	23 56 51 0	2 36 59 66	59 66	0 00	74 38 51 14	51 50	+0 36	16 3 98
	2	23 56 44 0	2 40 49 22	49 38	+0 16	74 21 3 54	3 70	+0 16	16 6 87
	3	23 56 38 1	2 44 39 81	39 65	-0 16	74 3 35 33	31 30	-4 03	16 0 68
	6	23 56 23				73 12 30 10	30 40	+0 30	16 1 97
	7	23 56 19				72 56 4 83	3 20	-1 63	16 3 77
	9	23 56 12							16 1 42
	10	23 56 10 2	3 11 47 60	47 3	-0 07	72 8 21 92	2 00	+3 08	15 59 96
	11	23 56 8 6	3 15 42 62	42 34	-0 28	71 53 8 82	7 80	-1 02	16 5 89
	12	23 56 7				71 38 8 79	8 80	+0 01	16 1 01
	13	23 56 7				71 23 29 81	28 40	-1 41	16 4 70
	14	23 56 6				71 9 4 62	6 70	+2 08	16 1 68
	15	23 56 6 9	3 31 27 16	27 13	-0 03	70 55 4 59	4 20	-0 39	16 1 50
	16	23 56 8 1	3 35 24 81	24 74	-0 07	70 41 22 59	21 00	-1 59	16 3 92
	17	23 56 9 6	3 39 22 89	22 86	-0 03	70 27 57 52	57 50	-0 02	16 3 65
	18	23 56 11 9	3 43 21 71	21 53	-0 18	70 14 52 34	53 70	+1 36	16 3 54
	19	23 56 14 6	3 47 21 11	20 76	-0 35	70 2 13 17	10 20	-2 97	16 1 95
	20	23 56 17 4	3 51 20 40	20 52	+0 12	69 49 45 90	46 90	+1 00	16 4 05
	21	23 56 21 2	3 55 20 76	20 82	+0 06	69 37 43 80	44 30	+0 45	16 1 12
	22	23 56 25 5	3 59 21 58	21 67	+0 09	69 26 2 17	2 50	+0 33	15 59 96
	23	23 56 30 2	4 3 22 96	23 03	+0 07	69 14 42 42	41 80	-0 62	16 3 47
	24	23 56 35 6	4 7 24 90	24 93	+0 03	69 3 39 86	42 30	+2 44	16 0 84
	25	23 56 41 4	4 11 27 24	27 35	+0 11				
	26	23 56 47 7	4 15 30 21	30 26	+0 05	68 42 46 56	48 60	+2 04	16 2 92
	27	23 56 54 6	4 19 33 73	33 69	-0 04	68 32 54 50	54 50	0 00	15 59 68
	28	23 57 2				68 23 21 82	22 60	+0 78	15 59 33
	29	23 57 9 7	4 27 41 83	41 97	+0 14	68 14 13 38	13 20	-0 18	15 59 70
	30	23 57 17 7	4 31 46 55	46 80	+0 25	68 5 25 32	26 40	+1 08	16 0 84
	31	23 57 26 4	4 35 51 84	52 06	+0 22	67 57 0 23	2 40	+2 17	16 2 67
June	1	23 57 35 8	4 39 57 79	57 77	-0 02	67 49 3 25	1 30	-1 95	16 0 93
	2	23 57 45 1	4 44 3 58	3 86	+0 28	67 41 23 20	23 40	+0 20	16 4 70
	3	23 57 54 8	4 48 9 83	10 36	+0 53	67 34 10 31	8 90	-1 41	16 2 18
	4	23 58 5 0	4 52 16 64	17 19	+0 55	67 27 16 96	17 90	+0 94	16 3 01

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (Continued)

M	S	Time	f	A R from	A R from	E	f N A	N P D from	N P D	Error	f N A	Mean
Ob	ti			Ob	rv	ti	N A	Ob	rv	tion	from	H S mid
1845												
J	5	23 58	15 7	4 56	24 09		24 37	+ 0 28	67 20	51 49	50 60	16 1 17
	6	23 58	27 0	5 0	31 91		31 87	- 0 04	67 14	46 46	47 00	16 0 57
	7	23 58	37 8	5 4	39 28		39 64	+ 0 36	67 9	7 72	7 50	16 4 07
	8	23 58	49 4	5 8	47 34		47 68	+ 0 34	67 3	52 10	51 90	16 4 72
	9	23 59	1 0	5 12	55 70		55 97	+ 0 27	66 58	59 52	0 50	16 4 98
	11	23 59	25						66 50	32 21	30 50	16 2 08
	12	23 59	37 1	5 25	21 65		22 01	+ 0 36	66 46	51 27	52 30	16 2 74
	13	23 59	50						66 43	38 21	38 40	16 1 59
	16	0 0	14 7	5 37	48 92		49 39	+ 0 47	66 38	26 65	24 60	16 7 17
	17	0 0	27 4	5 41	58 25		58 72	+ 0 47	66 36	25 16	24 80	16 2 10
	18	0 0	40 4	5 46	7 81		8 13	+ 0 32	66 34	48 39	49 60	16 3 07
	19	0 0	53 0	5 50	17 07		17 57	+ 0 50	66 33	38 15	39 20	16 2 96
	20	0 1	6 2	5 54	26 86		27 03	+ 0 17	66 32	53 80	53 60	16 1 19
	24	0 1	58						66 33	59 15	59 40	16 1 22
	25	0 2	10						66 35	17 46	17 80	16 2 22
	26	0 2	23						66 37	0 16	1 00	16 3 89
	28	0 2	47 9	6 27	41 17		41 39	+ 0 22				
	29	0 3	0 0	6 31	50 01		50 19	+ 0 18	66 44	36 33	38 40	
	30	0 3	12						66 47	59 88	59 90	16 3 34
J ly	1	0 3	24						66 51	46 12	46 90	
	2	0 3	35 5	6 44	15 18		15 40	+ 0 22	66 55	56 49	56 20	16 3 63
	3	0 3	46 6	6 48	22 91		23 31	+ 0 40	67 0	30 23	30 70	16 0 67
	4	0 3	58 0	6 52	30 83		30 95	+ 0 12	67 5	31 49	29 30	16 5 00
	5	0 4	8 7	6 56	38 17		38 26	+ 0 09	67 10	54 21	51 80	16 1 77
	6	0 4	19 2	7 0	45 09		45 24	+ 0 15	67 16	36 33	38 10	16 1 48
	7	0 4	29 3	7 4	51 84		51 88	+ 0 04	67 22	45 64	48 10	16 1 86
	8	0 4	38 9	7 8	7 99		58 12	+ 0 13	67 29	21 80	21 40	16 2 59
	11	0 5	5 4	7 21	14 40		14 37	- 0 03	67 51	18 66	20 90	16 3 60
	12	0 5	13 2	7 25	18 66		18 89	+ 0 23	67 59	28 94	26 50	16 5 23
	13	0 5	20 7	7 29	22 81		22 94	+ 0 13	68 7	53 04	54 80	16 2 27
	14	0 5	28						68 16	46 74	46 60	16 1 08
	15	0 5	34						68 26	1 00	58 50	
	16	0 5	40						68 35	35 35	33 30	16 4 31
	17	0 5	46						68 45	31 33	30 00	16 2 06
	18	0 5	50 3	7 49	35 40		35 59	+ 0 19	68 55	48 62	48 40	16 2 03
	20	0 5	59						69 17	29 14	29 00	15 57 89
	21	0 6	1 6	8 1	36 35		36 82	+ 0 47	69 28	52 87	50 80	16 2 12
	22	0 6	4 5	8 5	35 88		36 12	+ 0 24	69 40	35 70	33 30	16 3 97
	23	0 6	7						69 52	35 51	36 30	16 0 17
	24	0 6	9						70 5	1 11	59 70	16 2 74
	25	0 6	9 7	8 17	30 63		30 67	+ 0 04	70 17	43 25	42 90	16 1 39
	26	0 6	10						70 30	47 20	46 00	16 1 86
	27	0 6	10 0	8 25	24 12		24 20	+ 0 08	70 44	6 91	8 60	16 1 03
	29	0 6	7 9	8 33	15 07		15 41	+ 0 34	71 11	54 32	50 90	15 59 50
	30	0 6	6 0	8 37	9 80		10 14	+ 0 34	71 26	12 05	10 10	15 58 91
	31	0 6	4 1	8 41	4 39		4 27	- 0 12				
Aug	1	0 6	1 3	8 44	58 00		57 82	- 0 18	71 55	43 78	43 50	16 1 92
	2	0 5	57 4	8 48	50 78		50 76	- 0 02	72 10	58 92	57 00	16 3 58
	3	0 5	53 1	8 52	43 02		43 11	+ 0 09	72 26	25 74	27 80	16 4 56
	4	0 5	48						72 42	17 54	15 90	16 2 56
	5	0 5	42 7	9 0	25 67		25 99	+ 0 32				
	6	0 5	37						73 14	41 13	41 90	16 0 88
	8	0 5	23						73 48	15 34	12 90	15 59 51
	9	0 5	15 0	9 15	44 11		44 49	+ 0 38	74 5	22 54	21 80	15 58 76
	12	0 4	48 1	9 27	6 73		7 08	+ 0 35	74 58	20 71	18 80	16 4 48
	13	0 4	38 1	9 30	53 22		53 45	+ 0 23	75 16	27 91	27 00	16 3 06
	14	0 4	28						75 34	50 78	49 20	16 1 57

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (Continued)

Mea S lar Tim f Observ ti	A R fr m Ob rvati n.	A R fr m N A.	Erro f N A	N P D from Ob rv ti	N P D from N A.	Er f N A	M an II S mid.
1845	m						
A g 16 0 4 4				76 12 18 60	14 40	-4 20	16 4 52
17 0 3 52				76 31 13 41	16 90	+3 49	16 1 22
18 0 3 39				76 50 36 58	32 20	-4 38	16 0 86
19 0 3 26				77 10 2 42	0 20	-2 22	16 2 50
20 0 3 12				77 29 41 30	40 30	-1 00	
21 0 2 57 6	10 0 44 99	45 11	+ 0 12				
22 0 2 42 4	10 4 26 39	26 87	+ 0 48	78 9 35 66	36 30	+ 0 64	16 2 48
23 0 2 27 3	10 8 7 81	8 19	+ 0 38	78 29 51 39	51 50	+ 0 11	16 1 82
24 0 2 11 9	10 11 48 90	49 10	+ 0 20	78 50 19 79	17 70	-2 09	15 59 88
25 0 1 55 6	10 15 29 07	29 59	+ 0 52	79 10 56 73	54 60	-2 13	16 3 50
28 0 1 5 6	10 26 28 62	28 81	+ 0 19	80 13 46 61	46 60	-0 01	16 1 6
29 0 0 47 9	10 30 7 43	7 81	+ 0 38	80 35 5 60	3 30	-2 30	15 59 8
30 0 0 31				80 56 29 39	29 00	-0 39	16 1 50
31 23 59 54				81 39 46 14	46 20	+ 0 06	16 2 30
Sept 1 23 59 34 9	10 44 40 34	40 67	+ 0 33	82 1 37 42	37 10	-0 32	16 3 06
2 23 59 16				82 23 35 87	35 60	-0 27	16 2 78
3 23 58 57				82 45 41 52	41 60	+ 0 08	16 4 71
4 23 58 37				83 7 56 02	54 50	-1 52	16 1 15
6 23 57 58				83 52 38 91	40 00	+ 1 09	15 58 52
7 23 57 37 4	11 6 21 84	21 76	-0 08	84 15 10 98	11 00	+ 0 02	16 3 67
8 23 57 17 0	11 9 57 98	57 84	-0 14	84 37 49 77	49 70	-0 07	16 3 16
9 23 56 56 1	11 13 33 50	33 74	+ 0 24	85 0 32 68	32 70	+ 0 02	16 2 12
11 23 56 14 7	11 20 45 06	45 10	+ 0 04	85 46 16 28	13 50	-2 78	16 5 49
12 23 55 53 2	11 24 20 13	20 62	+ 0 49	86 9 10 76	10 70	-0 06	16 5 10
13 23 55 32				86 32 11 68	11 90	+ 0 22	16 3 57
14 23 55 11				86 55 18 35	16 90	-1 45	16 4 03
17 23 54 7 5	11 42 17 01	17 27	+ 0 26	88 4 52 89	51 50	-1 39	16 3 85
18 23 53 46 6	11 45 52 49	52 59	+ 0 10	88 28 7 71	8 40	+ 0 69	16 6 34
19 23 53 25 3	11 49 27 72	27 97	+ 0 25	88 51 28 92	27 70	-1 22	16 4 43
20 23 53 4 5	11 53 3 40	3 42	+ 0 02	89 14 50 62	48 80	-1 82	16 3 10
21 23 52 44				89 38 11 48	11 50	+ 0 02	16 0 17
23 23 52 1 9	12 3 50 31	50 43	+ 0 12	90 25 1 72	0 10	-1 62	16 1 11
24 23 51 41 2	12 7 26 15	26 41	+ 0 26	90 48 28 13	25 40	-2 73	16 4 7
25 23 51 20 6	12 11 2 01	2 56	+ 0 55	91 11 51 47	50 80	-0 67	16 1 15
26 23 51 0 7	12 14 38 64	38 93	+ 0 29	91 35 16 81	16 00	-0 81	16 3 58
28 23 50 21 1	12 21 52 02	52 32	+ 0 30	92 22 6 29	4 50	-1 79	16 6 92
29 23 50 1 4	12 25 28 86	29 41	+ 0 56	92 45 28 82	27 10	-1 72	16 4 41
30 23 49 42 8	12 29 6 53	6 76	+ 0 22	93 8 49 19	47 90	-1 29	16 6 55
Oct 1 23 49 24 0	12 32 44 29	44 39	+ 0 10	93 32 3 93	6 70	+ 2 77	16 3 30
2 23 49 5 3	12 36 21 98	22 32	+ 0 34	93 55 26 56	23 10	-3 46	16 4 5
3 23 48 47				94 18 37 00	36 70	-0 30	16 4 87
4 23 48 29 2	12 43 38 94	39 18	+ 0 24	94 41 47 75	47 10	-0 65	16 4 74
5 23 48 11 4	12 47 17 74	18 13	+ 0 39	95 4 56 44	54 10	-2 34	16 3 16
6 23 47 54 2	12 50 57 08	57 47	+ 0 39	95 27 57 47	57 10	-0 37	16 2 52
8 23 47 21 2	12 58 17 13	17 32	+ 0 19	96 13 48 65	50 00	+ 1 35	16 6 53
10 23 46 50 0	13 5 38 90	38 87	-0 03	96 59 25 29	22 80	-2 49	16 5 34
11 23 46 35 1	13 9 20 59	20 35	-0 24				
16 23 45 28				99 13 35 34	32 40	-2 94	16 0 68
17 23 45 16				99 35 28 86	28 40	-0 46	16 59 11
18 23 45 4 2	13 35 25 33	25 69	+ 0 36				
19 23 44 54 2	13 39 11 70	11 69	-0 01	100 18 56 85	55 20	-1 65	16 2 74
20 23 44 44 3	13 42 58 25	58 36	+ 0 11	100 40 27 89	25 30	-2 59	
21 23 44 34 9	13 46 45 52	45 72	+ 0 20	101 1 47 91	45 80	-2 11	16 1 81
22 23 44 26 6	13 50 33 70	33 76	+ 0 06				16 4 97
23 23 44 18 5	13 54 22 22	22 52	+ 0 30	101 43 56 11	57 20	+ 1 09	16 5 60
24 23 44 12 0	13 58 12 15	12 00	-0 15	102 4 50 24	47 20	-3 04	16 4 34
26 23 43 59 8	14 5 53 24	53 18	-0 06	102 45 52 79	53 40	+ 0 61	16 2 74

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (Continued)

M an Solar Tim Obs rv t n.	A. R from Ob rvation	A. R from N A	Err f N A	N P D fr m Ob t l	N P D from N A.	Err f N A	M H S m d
1845							
Oct 29 23 43 48				103 46 538	2 70	-2 68	15 59-69
30 23 43 45 2	14 21 24 61	24 73	+ 0 12	104 5 42 60	40 10	-2 50	16 6 63
31 23 43 43 5	14 25 19 49	19 58	+ 0 09	104 25 3 24	3 90	+ 0 66	16 2 01
Nov 1 23 43 42 7	14 29 15 14	15 22	+ 0 08	104 44 15 51	13 80	-1 71	16 4 32
2 23 43 42 7	14 33 11 80	11 67	-0 13	105 3 12 56	9 30	-3 26	16 4 16
3 23 43 43 2	14 37 8 84	8 91	+ 0 07	105 21 50 16	49 90	-0 26	16 3 74
4 23 43 44 9	14 41 7 02	6 97	-0 05	105 40 17 50	15 30	-2 20	16 3 10
5 23 43 47 8	14 45 5 49	5 84	+ 0 35	105 58 25 33	25 10	-0 23	16 5 29
6 23 43 50 3	14 49 5 61	5 53	-0 08	106 16 19 80	18 80	-1 00	16 4 72
7 23 43 54 1	14 53 6 03	6 03	0 00				16 3 14
8 23 43 59 0	14 57 7 46	7 37	-0 09	106 51 15 80	16 60	+ 0 80	
9 23 44 4 9	15 1 9 91	9 52	-0 39	107 8 19 99	19 80	-0 19	16 1 92
13 23 44 35				108 13 31 37	32 30	+ 0 93	16 3 18
15 23 44 55 6	15 25 40 05	40 17	+ 0 12				
16 23 45 7 4	15 29 48 44	48 24	-0 20	108 59 6 71	6 50	-0 21	16 4 07
17 23 45 19 4	15 33 57 08	57 16	+ 0 08	109 13 36 24	37 80	+ 1 56	16 5 01
20 23 46 1 5	15 46 28 92	28 95	+ 0 03	109 55 7 38	5 90	-1 48	16 5 01
21 23 46 17 1	15 50 41 18	41 22	+ 0 04	110 8 12 36	12 20	-0 16	16 5 03
23 23 46 51 2	15 59 8 46	8 18	-0 27	110 33 19 58	17 70	-1 88	16 7 83
24 23 47 9 0	16 3 22 83	22 85	+ 0 02	110 45 11 37	16 30	+ 4 93	16 3 64
25 23 47 28 2	16 7 38 55	38 28	-0 27	110 56 51 69	51 80	+ 0 11	16 3 01
26 23 47 47 6	16 11 54 62	54 47	-0 15	111 8 1 92	3 60	+ 1 68	16 5 34
27 23 48 8 0	16 16 11 58	11 41	-0 17	111 18 50 47	51 60	+ 1 13	16 0 99
28 23 48 29 0	16 20 29 23	29 06	-0 17	111 29 14 52	15 30	+ 0 78	16 5 23
Dec 2 23 49 59				112 6 40 55	41 90	+ 1 35	16 0 92
3 23 50 23 9	16 42 7 19	7 04	-0 15				
4 23 50 48 3	16 46 28 36	28 40	+ 0 05				16 6 47
5 23 51 13 5	16 50 50 14	50 30	+ 0 16				
8 23 52 32 4	17 3 58 88	58 95	+ 0 07	112 50 0 44	57 20	-3 24	16 3 54
9 23 52 59				112 55 42 05	36 50	-5 55	
10 23 53 27 0	17 12 46 76	46 89	+ 0 13	113 0 50 08	48 50	-1 58	16 1 77
11 23 53 55				113 5 35 39	33 00	-2 39	16 0 53
12 23 54 23				113 9 52 11	50 10	-2 01	16 3 16
13 23 54 52 0	17 26 1 68	1 48	-0 20	113 13 42 39	39 00	-2 89	16 0 58
16 23 56 19				113 22 23 37	20 30	-3 07	
17 23 56 48				113 24 21 45	17 90	-3 55	16 3 14
21 23 58 48 2	18 1 31 01	30 88	-0 13	113 27 26 98	25 30	-1 68	16 4 74
22 23 59 18				113 27 4 04	1 40	-2 64	
28 0 1 47 8	18 28 10 39	10 29	-0 10				
30 0 2 46 6	18 37 2 51	2 32	-0 19				
31 0 3 15 4	18 41 27 93	27 96	+ 0 03				
1846							
Ja 1 0 3 44				113 2 16 94	16 50	-0 44	16 5 93
2 0 4 12				112 57 15 55	12 00	-3 55	16 1 25
5 0 5 35 2	19 3 30 97	31 04	+ 0 07	112 39 16 27	14 70	-1 57	16 5 38
6 0 6 2 1	19 7 54 50	54 40	-0 10	112 32 23 31	21 60	-1 71	16 5 52
9 0 7 19 0	19 21 1 21	1 42	+ 0 21	112 8 59 01	3 30	+ 4 29	
10 0 7 43 6	19 25 22 40	22 70	+ 0 25				16 7 94
11 0 8 8				111 51 22 76	20 70	-2 06	16 6 85
12 0 8 31 3	19 34 3 39	3 44	+ 0 05	111 41 51 59	51 00	-0 59	16 8 63
13 0 8 54 1	19 38 22 91	22 90	-0 01	111 31 58 82	56 10	-2 72	16 6 94
14 0 9 16 5	19 42 41 89	41 73	-0 16	111 21 35 51	36 20	+ 0 69	16 8 99
15 0 9 37 7	19 46 59 68	59 90	+ 0 22	111 10 53 22	51 70	-1 52	16 5 38
16 0 9 59				110 59 42 70	42 80	+ 0 10	16 4 27
17 0 10 19 1	19 55 34 35	34 24	-0 11	110 48 12 23	9 80	-2 43	16 5 57
18 0 10 38 3	19 59 50 05	50 37	+ 0 32	110 36 11 39	13 00	+ 1 61	16 7 63
19 0 10 57 5	20 4 5 93	5 79	-0 14	110 23 57 29	52 80	-4 49	16 1 05

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER, (Continued)

M an S l Tim f				A R. fr m	A. R. from	Err f N A	N P D fr m	N P D	Err f N A	M
Ob rv ti				Ob ti	N A		Ob rv ti n.	f m N A		H Semid
1846				m				/		
Jan	20	0	11 16				110 11 11 96	9 50	-2 46	16 3 37
	21	0	11 32 7	20 12 34 34	34 48	+ 0 14	109 58 6 77	3 40	-3 37	16 2 12
	22	0	11 49 3	20 16 47 63	47 70	+ 0 07	109 44 37 13	34 90	-2 23	16 6 72
	23	0	12 4 9	20 20 59 68	0 16	+ 0 48	109 30 44 37	44 30	-0 07	16 4 91
	24	0	12 20 2	20 25 11 65	11 85	+ 0 20	109 16 31 80	32 10	+ 0 30	16 4 38
	25	0	12 34 9	20 29 22 94	22 77	-0 17	109 1 55 77	58 60	+ 2 83	16 2 26
	26	0	12 48 5	20 33 32 58	32 87	+ 0 29	108 47 2 63	4 20	+ 1 57	16 3 23
	27	0	13 1 2	20 37 41 88	42 17	+ 0 29	108 31 50 69	49 40	-1 29	
	28	0	13 13 0	20 41 50 43	50 65	+ 0 22				16 6 05
	29	0	13 24 2	20 45 58 04	58 33	+ 0 29	108 0 22 09	19 90	-2 19	16 5 05
	30	0	13 34				107 44 6 04	6 10	+ 0 06	16 4 70
	Feb	2	0	14 0 0	21 2 20 77	20 64	-0 13	106 53 35 75	33 00	-2 75	16 7 14
3		0	14 6 6	21 6 23 87	24 11	+ 0 24	106 36 6 59	6 20	-0 39	
4		0	14 12 8	21 10 26 68	26 73	+ 0 05	106 18 21 70	22 30	+ 0 60	16 6 34
5		0	14 18 1	21 14 28 55	28 51	-0 04	106 0 22 33	21 50	-0 83	16 6 34
6		0	14 22 3	21 18 29 39	29 46	+ 0 07	105 42 5 30	4 40	-0 90	
7		0	14 26				105 23 30 75	31 20	+ 0 45	
9		0	14 30 6	21 30 27 28	27 39	+ 0 11	104 45 41 77	38 50	-3 27	16 3 41
10		0	14 31 9	21 34 25 17	25 06	-0 11				16 4 38
11		0	14 32 7	21 38 22 46	21 98	-0 48	104 6 46 64	46 80	+ 0 16	16 5 76
12		0	14 31 8	21 42 18 19	18 11	-0 08	103 46 59 73	59 70	-0 03	16 2 41
13		0	14 30 4	21 46 13 40	13 47	+ 0 07	103 26 59 54	59 00	-0 54	16 1 99
15		0	14 26 0	21 54 2 01	2 00	-0 01	102 46 14 24	18 60	+ 4 36	16 4 45
16		0	14 22 6	21 57 55 21	55 16	-0 05	102 25 40 60	39 50	-1 10	16 3 47
17		0	14 18				102 4 49 19	48 40	-0 79	16 2 52
18		0	14 13 9	22 5 39 55	39 40	-0 15				16 0 35
19		0	14 8 5	22 9 30 74	30 50	-0 24	101 22 31 79	32 10	+ 0 31	16 1 97
20		0	14 2 2	22 13 20 90	20 93	+ 0 03	101 1 6 55	7 60	+ 1 05	16 2 78
21		0	13 55 3	22 17 10 55	10 74	+ 0 19	100 39 29 38	32 80	+ 3 42	16 3 24
23		0	13 40 3	22 24 48 61	48 42	-0 19	99 5 49 02	53 90	+ 4 88	16 5 38
24		0	13 31 8	22 28 36 63	36 34	-0 29	99 33 49 97	50 70	+ 0 73	16 0 37
25		0	13 22 6	22 32 24 03	23 67	-0 36	99 11 38 07	38 80	+ 0 73	16 4 23
26		0	13 12 6	22 36 10 51	10 39	-0 12	98 49 18 12	18 80	+ 0 68	16 1 92
27		0	13 2 2	22 39 56 57	56 57	0 00	98 26 51 05	51 00	-0 05	16 2 74
28		0	12 51 1	22 43 42 09	42 18	+ 0 09	98 4 16 43	15 80	-0 63	16 1 37
Mar	1	0	12 39 7	22 47 27 15	27 25	+ 0 10				16 6 05
	2	0	12 27 9	22 51 11 85	11 79	-0 06	97 18 45 40	44 90	-0 30	16 3 85
	3	0	12 15 2	22 54 56 69	56 82	+ 0 13	96 55 49 44	50 10	+ 0 66	16 1 61
	4	0	12 2 4	22 58 39 51	39 36	-0 15	96 32 49 12	49 60	+ 0 48	16 2 97
	5	0	11 48 8	23 2 22 28	22 40	+ 0 12	96 9 44 25	43 70	-0 55	16 0 50
	6	0	11 35 0	23 6 5 03	5 01	-0 02	95 46 34 18	32 90	-1 28	16 2 50
	7	0	11 20 7	23 9 47 25	47 15	-0 10	95 23 19 88	17 40	-2 48	16 2 83
	8	0	11 5 9	23 13 29 03	28 89	-0 14	94 59 58 83	57 80	-1 03	16 0 77
	9	0	10 50 7	23 17 10 31	10 23	-0 08	94 36 34 07	34 40	+ 0 33	16 2 50
	10	0	10 35 1	23 20 51 15	51 18	+ 0 03	94 13 10 78	7 50	-3 28	16 1 23
	11	0	10 19 1	23 24 31 74	31 80	+ 0 06	93 49 34 17	37 60	+ 3 43	16 2 83
	12	0	10 3				93 26 2 60	4 80	+ 2 20	16 1 32
	13	0	9 46				93 2 30 87	29 60	-1 27	16 2 10
	14	0	9 29 4	23 35 31 56	31 74	+ 0 18	92 38 50 66	52 50	+ 1 84	16 1 03
	15	0	9 13				92 15 15 78	13 70	-2 08	
	16	0	8 55 3	23 42 50 38	50 40	+ 0 02	91 51 32 40	33 50	+ 1 10	16 2 41
	17	0	8 37 9	23 46 29 52	29 40	-0 12	91 27 51 07	52 20	+ 1 13	15 58 85
	18	0	8 19 9	23 50 7 97	8 22	+ 0 25	91 4 11 17	10 40	-0 77	
	19	0	8 2 3	23 53 46 98	46 87	-0 11	90 40 30 48	28 30	-2 18	15 58 92
	20	0	7 44 6	23 57 24 92	25 38	+ 0 46	90 16 45 92	46 30	+ 0 38	16 1 86
	21	0	7 26 0	0 1 3 68	3 77	+ 0 09				16 0 26
	22	0	7 8 1	0 4 42 29	42 06	-0 23	89 29 24 43	24 10	-0 33	16 1 27

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (Continued)

Mean Solar Time of Observation				A.R. from Observatory	A.R. from N.A.	Error in A	N.P.D. from Observatory	N.P.D. from N.A.	Error in A	Mean H. Semid
1846							/	/		/
Mar	23	0	6 49 5	0 8 20 17	20 26	+ 0 09	89 5 42 06	44 50	+ 2 44	16 3 85
	24	0	6 31 7	0 11 58 82	58 40	- 0 42				16 1 37
	25	0	6 12 7	0 15 36 29	36 50	+ 0 21	88 18 31 12	30 70	- 0 42	16 3 36
	26	0	5 54 5	0 19 14 63	14 57	- 0 06	87 54 57 36	57 00	- 0 36	16 3 30
	27	0	5 36 0	0 22 52 55	52 63	+ 0 08	87 31 21 77	26 00	+ 4 23	16 4 55
	28	0	5 17 6	0 26 30 63	30 70	+ 0 07	87 7 54 81	58 00	+ 3 19	16 1 76
	29	0	4 59 0	0 30 8 62	8 79	+ 0 17	86 44 34 11	33 50	- 0 61	16 2 46
	30	0	4 41 1	0 33 47 27	46 92	- 0 35	86 21 10 54	13 30	+ 2 76	16 3 21
	31	0	4 22	0 37 25 06	25 10	+ 0 04	85 57 57 41	56 20	- 1 21	16 4 54
Apr	1	0	4 40	0 41 30 6	3 34	+ 0 28	85 34 42 05	44 20	+ 2 15	16 3 14
	2	0	3 40 6	0 44 41 28	41 67	+ 0 39	85 11 35 11	37 00	+ 1 89	16 4 07
	3	0	3 28 0	0 48 20 11	20 11	0 00	84 48 33 31	35 10	+ 1 79	16 1 55
	4	0	3 10				84 25 37 75	38 80	+ 1 05	16 2 57
		0	2 51 9	0 55 37 04	37 37	+ 0 33	84 2 46 62	48 40	+ 1 78	16 2 32
	6	0	2 34 4	0 59 15 99	16 23	+ 0 24	83 40 2 62	4 10	+ 1 48	16 1 04
	7	0	2 17				83 17 24 69	26 50	+ 1 91	16 3 56
	8	0	1 59 7	1 6 34 36	34 51	+ 0 15	82 54 54 39	55 80	+ 1 41	16 1 26
	9	0	1 42 7	1 10 13 89	13 97	+ 0 08	82 32 27 85	32 30	+ 4 45	16 1 35
	10	0	1 26 0	1 13 53 63	53 67	+ 0 04	82 10 16 08	16 40	+ 0 32	16 2 59
	11	0	1 9 7	1 17 33 88	33 64	- 0 24	81 48 11 34	8 10	- 3 24	16 2 45
	12	0	0 53 3	1 21 13 95	13 88	- 0 07	81 26 9 06	8 50	- 0 56	16 1 43
	13	0	0 37 1	1 24 54 25	54 41	+ 0 16	81 4 16 64	17 20	+ 0 56	15 59 78
	14	0	0 22				80 42 34 32	34 60	+ 0 28	15 59 76
	15	0	0 6 7	1 32 16 91	16 52	- 0 39	80 21 0 91	1 20	+ 0 29	16 4 54
	15	23	59 51 3	1 35 58 03	58 11	+ 0 08	79 59 37 48	37 30	- 0 18	16 1 28
	16	23	59 37				79 38 21 83	23 20	+ 1 37	16 3 83
	17	23	59 23				79 17 16 81	19 30	+ 2 49	16 1 37
	19	23	58 56				78 35 41 51	43 10	+ 1 59	16 2 46
	20	23	58 43				78 15 9 40	11 50	+ 2 10	16 2 12
	21	23	58 30 2	1 58 16 00	16 15	+ 0 15	77 54 50 18	51 50	+ 1 32	16 1 50
	22	23	58 18 2	2 2 0 61	0 70	+ 0 09	77 34 40 84	43 30	+ 2 46	16 2 37
	23	23	58 7 2	2 5 46 09	45 72	- 0 37	77 14 43 27	47 20	+ 3 93	16 4 31
	24	23	57 56				76 55 3 31	3 70	+ 0 39	15 59 96
	25	23	57 45 2	2 13 17 13	17 21	+ 0 08	76 35 31 00	33 00	+ 2 00	15 59 12
	26	23	57 35 4	2 17 3 90	3 70	- 0 20	76 16 16 37	15 50	- 0 87	16 1 35
	27	23	57 25 7	2 20 50 64	50 67	+ 0 03	75 57 10 04	11 50	+ 1 46	15 59 86
	28	23	57 16				75 38 24 22	21 50	- 2 72	16 2 78
	29	23	57 8 1	2 28 26 16	26 15	- 0 01	75 19 48 49	45 60	- 2 89	
	30	23	57 0 0	2 32 14 51	14 65	+ 0 14	75 1 25 28	24 20	- 1 08	16 0 82
May	1	23	56 52 8	2 36 3 89	3 68	- 0 21	74 43 19 58	17 70	- 1 88	16 2 78
	2	23	56 45 8	2 39 53 43	53 23	- 0 20	74 25 26 00	26 20	+ 0 20	16 1 86
	3	23	56 39 1	2 43 43 26	43 29	+ 0 03	74 7 52 46	50 50	- 1 76	15 59 90
	4	23	56 32 9	2 47 33 59	33 92	+ 0 33	73 50 31 28	30 30	- 0 98	16 1 63
	5	23	56 27 8	2 51 25 06	25 08	+ 0 02	73 33 23 93	26 30	+ 2 37	16 1 48
	6	23	56 22 8	2 55 16 59	16 78	+ 0 19	73 16 34 43	38 60	+ 4 17	16 5 32
	7	23	56 18 6	2 59 8 94	9 06	+ 0 12	73 0 6 31	7 60	+ 1 29	16 2 64
	8	23	56 14 6	3 3 1 50	1 90	+ 0 40	72 43 53 60	53 60	0 00	16 0 64
	9	23	56 11 7	3 6 55 04	55 30	+ 0 26				16 1 46
	10	23	56 9 2	3 10 49 15	49 27	+ 0 12	72 12 18 80	17 60	- 1 20	16 3 94
	11	23	56 7 1	3 14 43 62	43 83	+ 0 21	71 56 55 40	56 20	+ 0 80	16 0 40
	12	23	56 5 8	3 18 38 90	38 96	+ 0 06	71 41 52 22	52 80	+ 0 58	16 2 54
	13	23	56 5				71 27 7 12	7 80	+ 0 68	16 2 63
	14	23	56 4 6	3 26 30 75	31 00	+ 0 25	71 12 41 13	41 60	+ 0 37	16 2 65
	15	23	56 5 1	3 30 27 80	27 92	+ 0 12	70 58 33 86	34 20	+ 0 34	16 3 65
	16	23	56 5 9	3 34 25 13	25 41	+ 0 28	70 44 44 93	46 10	+ 1 17	16 3 92
	17	23	56 7 3	3 38 23 19	23 49	+ 0 30	70 31 19 23	17 60	- 1 73	16 2 63
	18	23	56 9 5	3 42 21 95	22 15	+ 0 20				16 1 22

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (Continued)

Mean Solar Time of Observation	Right Ascension from Observation	Right Ascension from N.A.	Error of N.A.	North Polar Distance from Observation	North Polar Distance from N.A.	Error of N.A.	Mean Right Ascension and North Polar Distance
1846							
May 19 23 56 11.9	3 46 20.92	21 40	+ 0.48	70 5 20.45	19 60	- 0.85	16 2 72
20 23 56 15				69 52 49.37	51 10	+ 1.73	16 1 92
21 23 56 19				69 40 41.28	43 10	+ 1.82	16 1 97
22 23 56 24				69 28 57.84	55 80	- 2.04	16 0 22
26 23 56 46.0	4 14 30.94	31 33	+ 0.39	68 45 20.46	19 60	- 0.86	16 1 02
28 23 57 1				68 25 41.60	42 50	+ 0.90	16 1 60
29 23 57 8.2	4 26 42.92	43 01	+ 0.09	68 16 27.52	27 50	- 0.02	16 1 68
30 23 57 16				68 7 34.16	35 10	+ 0.94	16 1 66
31 23 57 24.9	4 34 52.70	52 95	+ 0.25	67 59 7.19	5 40	- 1.79	15 59 91
June 1 23 57 34				67 50 58.36	58 70	+ 0.34	16 3 57
2 23 57 43.1	4 43 4.10	4 44	+ 0.34	67 43 17.04	15 20	- 1.84	16 2 81
3 23 57 53				67 35 54.50	55 00	+ 0.50	15 59 63
4 23 58 3				67 28 57.14	58 20	+ 1.06	16 1 82
5 23 58 13.7	4 55 24.53	24 31	- 0.22	67 22 25.52	25 10	- 0.42	15 59 84
6 23 58 24	4 59 31.35	31 58	+ 0.23	67 16 19.23	15 70	- 3.53	16 1 70
7 23 58 35				67 10 29.30	30 20	+ 0.90	16 0 17
9 23 58 57.6	5 11 54.76	55 08	+ 0.32	67 0 11.78	11 50	- 0.28	16 1 66
10 23 59 10				66 55 40.29	38 50	- 1.79	16 1 64
11 23 59 22				66 51 29.62	29 80	+ 0.18	16 1 92
12 23 59 33.4	5 24 20.28	20 77	+ 0.49	66 47 44.55	45 60	+ 1.05	16 1 72
14 23 59 58.5	5 32 38.55	38 86	+ 0.31	66 41 32.87	30 70	- 2.17	16 2 37
15 0 0 11.2	5 36 47.82	48 16	+ 0.34	66 38 59.30	0 30	+ 1.00	16 3 01
17 0 0 24.0	5 40 57.16	57 58	+ 0.42	66 36 55.85	54 50	- 1.35	15 59 20
18 0 0 37				66 35 13.68	13 50	- 0.18	16 0 07
19 0 0 50.0	5 49 16.52	16 69	+ 0.17	66 33 57.86	57 20	- 0.66	16 5 81
20 0 1 3				66 33 5.95	5 80	- 0.15	16 5 78
22 0 1 29.0	6 1 45.21	45 72	+ 0.51	66 32 37.80	37 40	- 0.40	16 3 12
24 0 1 55.2	6 10 4.59	4 98	+ 0.39	66 33 48.45	48 30	- 0.15	16 0 39
25 0 2 8				66 35 1.66	0 90	- 0.76	16 0 68
26 0 2 21				66 36 38.61	38 20	- 0.41	
28 0 2 46				66 41 7.55	6 70	- 0.85	
30 0 3 11				66 47 14.25	13 30	- 0.95	16 1 80
July 2 0 3 33.8	6 43 15.94	16 44	+ 0.50	66 54 58.09	57 50	- 0.59	16 2 34
3 0 3 45.3	6 47 24.02	24 32	+ 0.30	66 59 27.22	25 80	- 1.42	16 3 57
4 0 3 56.1	6 51 31.45	31 91	+ 0.46	67 4 18.89	18 30	- 0.59	15 59 91
5 0 4 7.1	6 55 39.00	39 18	+ 0.18	67 9 36.16	34 70	- 1.46	16 1 48
7 0 4 27.2	7 3 52.23	52 65	+ 0.42	67 21 19.72	18 80	- 0.92	16 0 59
8 0 4 36.8	7 7 58.48	58 84	+ 0.36				
9 0 4 45.8	7 12 4.02	4 65	+ 0.63	67 34 35.03	37 10	+ 2.07	16 0 97
10 0 4 55				67 41 52.23	51 30	- 0.93	16 4 05
13 0 5 19				68 5 51.63	51 50	- 0.13	16 1 88
14 0 5 26				68 14 36.43	37 00	+ 0.57	15 59 02
15 0 5 33				68 23 44.61	44 90	+ 0.29	
16 0 5 39				68 33 13.37	14 90	+ 1.53	
20 0 5 59				69 14 54.99	52 20	- 2.79	
25 0 6 11				70 14 44.86	44 60	- 0.26	15 58 69
26 0 6 12				70 27 44.89	43 20	- 1.69	16 1 74
27 0 6 12.0	8 24 28.52	28 67	+ 0.15	70 41 1.91	1 30	- 0.61	16 1 92
28 0 6 12				70 54 40.10	38 50	- 1.60	16 0 51
29 0 6 11				71 8 34.43	34 50	+ 0.07	15 59 64
30 0 6 8.6	8 36 14.73	15 10	+ 0.37	71 22 51.10	49 10	- 2.00	16 0 15
31 0 6 6.4	8 40 9.16	9 33	+ 0.17	71 37 23.04	21 90	- 1.14	16 1 65
August 1 0 6 4				71 52 13.63	12 90	- 0.73	16 1 94
2 0 6 0				72 7 24.83	21 50	- 3.33	15 59 95
3 0 5 56				72 22 49.69	47 60	- 2.09	16 1 48
5 0 5 45.9	8 59 31.39	31 15	- 0.24	72 54 32.81	31 10	- 1.71	16 0 60

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (Continued)

M	S	T	m	f	A R f m	A R f m	E	f N A	N P D from	N P D	Err	f N A	M an
Obs	rv	ti			Ob	rv	ti	N A	Ob	rv	ti	fr m	H S mid
												N A	
1846					m								
A g	6	0	5	40					73 10 47 46	47 80	+ 0 34		15 59 84
	10	0	5	10					74 18 36 61	35 20	- 1 41		
	11	0	5	07	9 22 25 33	25 46	+ 0 13		74 36 11 21	10 80	- 0 41		16 2 27
	12	0	4	51 2	9 26 12 33	12 51	+ 0 18		74 54 0 54	1 10	+ 0 56		16 1 01
	13	0	4	41					75 12 4 39	6 00	+ 1 61		15 59 78
	17	0	3	56					76 26 44 70	4 30	+ 0 60		16 0 75
	18	0	3	43 3	9 48 43 59	43 73	+ 0 14		76 46 0 27	58 30	- 1 97		16 0 67
	19	0	3	30					77 5 25 99	24 10	- 1 89		16 1 86
	20	0	3	17					77 25 6 28	2 20	- 4 08		16 1 42
	21	0	3	3					77 44 52 29	52 40	+ 0 11		16 0 22
	22	0	2	48					78 4 57 97	54 20	- 3 77		15 57 90
	24	0	2	18					78 45 31 56	31 20	- 0 36		16 2 23
	25	0	2	1 8	10 14 37 66	38 04	+ 0 38		79 6 8 80	5 80	- 3 00		16 2 54
	26	0	1	45 5	10 18 17 92	18 32	+ 0 40		79 26 54 95	50 90	- 4 05		
	27	0	1	29 0	10 21 57 83	58 16	+ 0 33		79 47 46 85	45 90	- 0 95		16 1 74
	28	0	1	12 2	10 25 37 65	37 62	- 0 03		80 8 52 06	50 60	- 1 46		16 3 94
	29	0	0	54 7	10 29 16 62	16 68	+ 0 06		80 30 7 49	4 50	- 2 99		15 59 33
	31	0	0	19					81 13 1 67	59 30	- 2 37		16 2 87
S pt.	1	23	59	41					81 56 31 21	27 40	- 3 81		
	2	23	59	22					82 18 25 81	23 30	- 2 51		15 59 79
	3	23	59	30	10 51 4 03	3 88	- 0 10		83 2 38 69	37 00	- 1 69		16 1 81
	4	23	58	43 6	10 54 41 05	40 73	- 0 32		83 47 19 62	18 30	- 1 32		15 58 77
	6	23	58	34	11 1 53 86	53 74	- 0 12		84 9 52 89	48 30	- 4 59		15 58 83
	7	23	57	43					86 26 44 06	41 90	- 2 16		15 59 84
	13	23	55	39					86 49 48 04	46 70	- 1 34		16 2 21
	14	23	55	17 7	11 30 40 08	39 81	- 0 27		87 13 0 25	55 10	- 5 15		16 1 81
	15	23	54	56					88 22 38 74	38 50	- 0 24		16 0 75
	18	23	53	53					89 9 20 43	19 10	- 1 33		16 2 14
	20	23	53	11					89 32 44 26	41 90	- 2 36		16 0 28
	21	23	52	61					89 56 8 47	5 80	- 2 67		15 57 99
	22	23	52	30					90 19 29 96	30 50	- 0 54		16 2 54
	23	23	52	9 2	12 2 59 97	59 87	- 0 10		91 53 13 05	10 10	- 2 95		16 1 72
	27	23	50	47 6	12 17 24 36	24 70	+ 0 34		92 16 38 15	33 60	- 4 65		16 3 77
	28	23	50	27 9	12 21 1 20	1 37	+ 0 17		92 39 52 32	55 60	+ 3 28		16 0 12
	29	23	50	8 6	12 24 38 32	38 27	- 0 05						
Oct	1	23	49	30 2	12 31 53 03	52 79	- 0 24		93 26 36 19	34 30	- 1 89		16 0 17
	4	23	48	34 6	12 42 46 84	46 86	+ 0 02		94 36 13 21	14 30	+ 1 09		16 4 26
	5	23	48	16 8	12 46 25 59	25 57	- 0 02		94 59 25 10	21 30	- 3 80		16 0 71
	6	23	47	59 4	12 50 4 70	4 67	- 0 03		95 22 24 60	24 70	+ 0 05		16 0 59
	9	23	47	10					96 31 13 90	9 10	- 4 80		16 0 28
	12	23	46	24 4	13 12 8 62	8 70	+ 0 08		97 39 6 26	8 30	+ 2 04		16 0 21
	13	23	46	10 4	13 15 51 25	51 15	- 0 10		98 1 38 87	34 70	- 4 17		16 1 47
	14	23	45	56 8	13 19 34 26	34 13	- 0 13		98 23 57 24	55 60	- 1 64		16 2 50
	21	23	44	39					100 56 40 60	42 10	+ 1 50		
	22	23	44	30 4	13 49 39 99	39 88	- 0 11		101 17 54 57	55 40	+ 0 83		16 1 72
	23	23	44	22 2	13 53 28 31	28 51	+ 0 20		101 38 58 59	58 50	- 0 09		16 1 74
	25	23	44	8 5	14 1 7 67	7 86	+ 0 19		102 20 32 62	32 20	- 0 42		16 1 94
	26	23	44	2 9	14 4 58 61	58 59	- 0 02		102 41 3 68	2 10	- 1 58		16 1 70
	27	23	43	58					103 1 23 06	20 10	- 2 96		16 1 01
	28	23	43	53 3	14 12 42 10	42 24	+ 0 14		103 21 26 85	25 70	- 1 15		16 1 03
	29	23	43	49 6	14 16 34 95	35 19	+ 0 24		103 41 18 64	18 70	+ 0 06		16 2 03
	30	23	43	47	14 20 28 90	28 88	- 0 02		104 0 57 96	58 70	+ 0 74		16 3 06
N v	1	23	43	43 6	14 28 18 65	18 61	- 0 04		104 39 35 56	37 70	+ 2 14		
	2	23	43	43 1	14 32 14 61	14 68	+ 0 07		104 58 37 49	36 00	- 1 49		16 3 23
	3	23	43	43 5	14 36 11 53	11 56	+ 0 03		105 17 19 68	19 70	+ 0 02		16 3 01
	4	23	43	44 7	14 40 9 37	9 27	- 0 10		105 35 48 44	48 30	- 0 14		16 2 98

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (Continued)

M an S lar T m f	A R fr m	A R from	Err f N A	N P D fr m	N P D	Err f N A	M
Obs ti	Obs rv ti	N A		Ob vati	from N A		H S mid
1846							
Nov 5 23 43 46 5	14 44 7 68	7 81	+ 0 13	105 53 59 17	1 40	+ 2 23	16 1 23
6 23 43 49 4	14 48 7 21	7 17	- 0 04	106 11 58 66	58 60	- 0 06	16 1 35
8 23 43 58				106 47 2 45	4 00	+ 1 55	16 2 31
15 23 44 53 6	15 24 40 48	40 50	+ 0 02	108 40 33 35	34 80	+ 1 45	16 3 81
18 23 45 30				109 24 24 22	23 80	- 0 42	16 2 10
27 23 48 4 0	16 15 10 07	9 82	- 0 25	111 36 47 68	50 40	+ 2 72	16 2 63
29 23 48 46							
De 2 23 49 54				112 4 38 21	35 40	- 2 81	16 4 94
10 23 53 19 9	17 11 42 17	42 05	- 0 12	112 59 27 49	32 30	+ 4 81	16 3 16
11 23 53 48 2	17 16 7 07	6 58	- 0 49				
17 23 56 41 6	17 42 40 28	40 53	+ 0 25				
18 23 57 12 0	17 47 6 59	6 96	+ 0 37				
21 23 58 41 4	18 0 26 72	26 88	+ 0 16	113 27 20 27	23 50	+ 3 23	16 3 38
27 0 1 11 3	18 22 39 73	39 74	+ 0 01				16 5 32
1847							
J 4 0 5 0 9	18 58 2 40	2 17	- 0 23	112 47 12 34	10 50	- 1 84	16 4 57
5 0 5 28 3	19 2 26 42	25 98	- 0 44	112 40 47 87	51 00	+ 3 13	16 2 84
6 0 5 54 8	19 6 49 55	49 38	- 0 17	112 34 9 06	4 50	- 4 56	
8 0 6 46 9	19 15 34 91	34 81	- 0 10	112 19 10 07	11 10	+ 1 03	16 5 74
9 0 7 12 6	19 19 57 22	56 80	- 0 42	112 11 4 20	4 90	+ 0 70	16 3 89
10 0 7 37 5	19 24 18 75	18 27	- 0 48				16 4 78
11 0 8 1 3	19 28 39 22	39 21	- 0 01	111 53 30 85	34 20	+ 3 35	16 2 81
12 0 8 24 9	19 32 59 39	59 57	+ 0 18	111 44 14 41	10 20	- 4 21	16 3 25
13 0 8 48 2	19 37 19 37	19 32	- 0 05	111 34 18 42	21 00	+ 2 58	16 3 16
14 0 9 10 7	19 41 38 45	38 47	+ 0 02	111 24 5 47	6 80	+ 1 33	16 4 97
15 0 9 32 9	19 45 57 30	56 98	- 0 32	111 13 29 17	27 70	- 1 47	16 4 0
16 0 9 53 6	19 50 14 66	14 83	+ 0 17	111 2 21 98	24 40	+ 2 42	16 2 81
17 0 10 14 6	19 54 32 26	31 97	- 0 20				
18 0 10 34 5	19 58 48 71	48 41	- 0 30	110 39 7 16	5 50	- 1 66	16 4 18
19 0 10 53 7	20 3 4 63	4 12	- 0 52	110 26 46 86	50 80	+ 3 94	16 4 85
20 0 11 12				110 14 15 27	13 10	- 2 17	16 5 17
21 0 11 29 4	20 11 33 45	33 27	- 0 18	110 1 9 76	12 50	+ 2 74	16 6 16
22 0 11 46 1	20 15 46 70	46 68	- 0 02	109 47 51 29	49 60	- 1 69	16 4 43
23 0 12 32 1	20 28 22 54	22 12	- 0 42	109 5 33 46	30 40	- 3 06	16 5 47
26 0 12 45 6	20 32 32 64	32 32	- 0 32	108 50 38 06	41 80	+ 3 74	16 3 94
27 0 12 58 3	20 36 41 97	41 67	- 0 30	108 35 35 00	32 50	- 2 50	16 3 54
30 0 13 31 4				107 48 0 36	5 60	+ 5 24	16 2 83
31 0 13 41							16 1 66
Feb 1 0 13 49 4	20 57 15 97	15 98	+ 0 01	107 14 54 15	52 00	- 2 15	16 3 58
2 0 13 57				106 57 49 63	47 60	- 2 03	16 2 21
5 0 14 16 1	21 13 28 97	28 64	- 0 33	106 4 45 43	49 10	+ 3 67	16 3 79
6 0 14 20 8	21 17 30 23	29 78	- 0 45	105 46 33 55	35 80	+ 2 25	16 4 18
13 0 14 30 7	21 45 15 98	15 91	- 0 07	103 31 53 38	51 50	- 1 88	16 2 97
15 0 14 27				102 51 9 71	15 90	+ 6 19	16 4 63
16 0 14 23 6	21 56 58 57	58 59	+ 0 02	102 30 37 92	39 30	+ 1 38	16 5 37
17 0 14 20				102 9 53 16	50 80	- 2 36	16 2 28
18 0 14 15 4	22 4 43 43	43 38	- 0 05	101 48 46 54	50 70	+ 4 16	16 1 46
20 0 14 4 1	22 12 25 23	25 36	+ 0 13	101 6 13 47	17 80	+ 4 33	
23 0 13 42 5	22 23 53 17	53 20	+ 0 03	100 1 7 66	12 30	+ 4 64	16 4 58
24 0 13 33 9	22 27 41 10	41 19	+ 0 09	99 39 12 84	12 00	- 0 84	16 1 37
25 0 13 24 8	22 31 28 53	28 53	0 00	99 17 0 88	2 90	+ 2 02	16 1 87
26 0 13 14 9	22 35 15 19	15 27	+ 0 08	98 54 45 97	45 50	- 0 47	16 3 83
27 0 13 4 5	22 39 1 34	1 43	+ 0 09	98 32 17 26	20 40	+ 3 14	16 1 50
Mar 1 0 12 42 2	22 46 32 08	32 07	- 0 01	97 47 6 82	8 10	+ 1 28	16 2 50
3 0 12 17 7	22 54 0 65	0 61	- 0 04	97 1 29 07	29 00	- 0 07	16 5 08
4 0 12 4 7	22 57 44 14	44 15	+ 0 01	96 38 27 78	30 30	+ 2 52	16 2 41

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN CENTRE (Continued)

M	S	T	f	A R f m	A R f m	Er	f N A	N P D f r m	N P D	Err	f N A	M	
Observ	ti			Ob	rv t	N A		Ob	ti	fr m	N A	H	S mid
1847			m		m								
M	5	0	11	51.3	23 1 27 20	27 23	+ 0.03	96 15 22 23	25 90	+ 3.67		16	5 03
	6	0	11	37.7	23 5 10 15	9 87	— 0.28	95 52 22 08	16 40	— 5.68		16	5 25
	8	0	11	8.6	23 12 34 04	33 95	— 0.09	95 3 39 86	43 40	+ 3.54		16	3 61
	9	0	10	53.5	23 16 15 40	15 42	+ 0.02	94 42 18 49	20 50	+ 2.01		16	4 51
	10	0	10	38.0	23 19 56 42	56 55	+ 0.13	94 18 54 65	53 80	— 0.85		16	3 01
	11	0	10	22.0	23 23 36 86	37 35	+ 0.49	93 55 19 51	23 90	+ 4.39		16	4 50
	12	0	10	6.3	23 27 17 74	17 84	+ 0.10	93 31 51 69	51 10	— 0.59		16	2 65
	13	0	9	50.0	23 30 57 97	58 04	+ 0.07	93 8 10 04	15 80	+ 5.76		16	5 54
	16	0	8	5.9				91 57 21 19	18 40	— 2.79		16	3 81
	17	0	8	4.2				91 33 36 72	36 70	— 0.02		16	1 90
	18	0	8	2.5				91 9 57 17	54 50	— 2.67		16	0 27
	19	0	8	6.7	23 52 53 75	54 03	+ 0.28	90 46 6 80	12 00	+ 5.20		16	4 97
	20	0	7	49.1	23 56 32 67	32 67	0.00	90 22 30 44	29 70	— 0.74		16	4 37
	23	0	6	54.9	0 7 27 92	27 70	— 0.22	89 11 26 52	27 30	+ 0.78		16	1 83
	24	0	6	36.4	0 11 5 93	5 81	— 0.12	88 47 42 05	49 30	+ 7.25		16	3 32
	25	0	6	17.9	0 14 43 90	43 84	— 0.06	88 24 14 56	13 30	— 1.26		16	3 43
	26	0	5	59.4	0 18 21 91	21 82	— 0.09	88 0 37 19	39 80	+ 2.61		16	1 32
	27	0	5	40.6	0 21 59 63	59 75	+ 0.12	87 37 6 59	8 80	+ 2.21		16	3 68
	29	0	5	3.9	0 29 15 92	15 59	— 0.33	86 50 13 33	16 20	+ 2.87		16	5 25
	30	0	4	4.5				86 26 55 48	55 30	— 0.18		16	2 14
	31	0	4	26.2	0 36 31 29	31 57	+ 0.28	86 3 35 35	38 50	+ 3.15		16	4 09
Apr 1	1	0	4	8				85 40 22 05	26 00	+ 3.95		16	2 57
	2	0	3	49.7	0 43 47 71	47 84	+ 0.13	85 17 15 99	18 20	+ 2.21		16	4 69
	3	0	3	31.7	0 47 26 28	26 13	— 0.15	84 54 15 68	15 50	— 0.18		16	4 65
	5	0	2	55.6	0 54 43 25	43 23	— 0.05	84 8 29 23	26 20	— 3.03		16	4 37
	6	0	2	3.8				83 45 40 78	40 30	— 0.48		16	0 39
	7	0	2	20.8	1 2 1 34	1 06	— 0.28	83 22	0 90			16	6 87
	8	0	2	3.4	1 5 40 46	40 30	— 0.16					16	2 02
	9	0	1	46.3	1 9 19 84	19 79	— 0.05	82 38 2 49	2 40	— 0.09		16	5 68
	10	0	1	29.8	1 12 59 88	59 56	— 0.32	82 15 39 50	44 10	+ 4.60		16	5 8
	12	0	0	5.7				81 31 32 53	30 90	— 1.63		16	1 97
	13	0	0	41.0	1 24 0 62	0 57	— 0.05	81 9 31 87	36 70	+ 4.83		16	6 00
	14	0	0	25.0	1 27 41 13	41 53	+ 0.40	80 47 45 35	51 30	+ 5.95		16	3 58
	15	0	0	10				80 26 8 80	15 10	+ 6.30		16	1 82
	18	23	59	12.6	1 46 11 25	11 56	+ 0.31	79 1 31 44	28 30	— 3.14		16	4 21
	20	23	58	46.2	1 53 37 88	38 23	+ 0.35	78 20 6 37	8 70	+ 2.33		16	3 38
	21	23	58	33.8	1 57 22 06	22 18	+ 0.12	77 59 45 39	46 00	+ 0.61		16	5 10
	22	23	58	21.6	2 1 6 30	6 54	+ 0.24	77 39 30 25	36 20	+ 4.95		16	5 61
	23	23	58	10.2	2 4 51 43	51 36	— 0.07	77 19 35 11	36 50	+ 1.39		16	4 30
	25	23	57	47.8	2 12 22 15	22 34	+ 0.19	76 40 19 80	17 10	— 2.70		16	5 77
	27	23	57	27.7	2 19 55 08	55 21	+ 0.13	76 1 48 33	50 30	+ 1.97		16	1 90
	28	23	57	18.1	2 23 41 96	42 40	+ 0.44	75 42 36 89	57 40	+ 0.51		16	0 35
	29	23	57	10				75 24 17 79	18 60	+ 0.81		16	1 97
	30	23	57	1.5	2 31 18 45	18 35	— 0.10	75 5 52 62	54 10	+ 1.48		16	3 98
May	2	23	56	46.5	2 38 56 61	56 46	— 0.15					16	3 63
	3	23	56	39.6	2 42 46 16	46 34	+ 0.18	74 12 10 08	10 00	— 0.08		16	4 23
	4	23	56	33.8	2 46 36 88	36 81	— 0.07	73 4 49 61	46 10	— 3.51		16	2 63
	5	23	56	28.4	2 50 27 62	27 84	+ 0.22	73 37 37 34	38 10	+ 0.76		16	2 38
	6	3	56	23				73 20 47 20	46 40	— 0.80		16	0 73
	7	23	56	19				73 4 11 17	11 10	— 0.07		16	3 36
	10	23	56	9.2	3 9 51 62	51 88	+ 0.26	72 16 7 24	7 40	+ 0.16		16	3 74
	11	23	56	7.1	3 13 46 10	46 46	+ 0.36	72 0 40 94	41 10	+ 0.16		16	4 58
	12	23	56	6				71 45 31 52	33 00	+ 1.48		16	3 78
	13	23	56	5.5	3 21 37 49	37 38	— 0.11	71 30 43 40	43 20	— 0.20		16	2 17
	14	23	56	5.1	3 25 33 71	33 71	0.00	71 16 9 02	11 90	+ 2.88		16	1 26
	16	23	56	6.5	3 33 28 14	28 09	— 0.05	70 48 4 02	6 50	+ 2.48		16	4 21
	17	23	56	7.6	3 37 25 86	26 13	+ 0.27	70 34 33 24	32 90	— 0.34		16	3 45

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (*C t n u d*)

b s Tim f				A R f m		A R f m		Err f N A	N P D fr m		N P D f m		Err f N A	M an		
Ob ti				Ob i		N A			Ob rv ti		f m N A			H S id		
1847																
M y				m					70 21 18 90		19 00		+ 0 10		16 3 10	
19 23 56 12 1				3 45 23 53		23 83		+ 0 30	70 8 27 20		25 10		- 2 10		16 0 84	
20 23 56 15 1				3 45 23 09		23 48		+ 0 39	69 55 49 03		51 60		+ 2 57		16 3 45	
24 23 56 32 5				4 5 26 76		27 23		+ 0 47	69 9 4 63		5 20		+ 0 57		16 0 64	
25 23 6 38 4				4 9 29 22		29 12		+ 0 20	68 58 15 05		16 80		+ 1 75		16 2 90	
26 23 56 15									68 47 52 52		50 00		- 2 52		16 0 60	
30 23 57 13 8				4 29 47 39		47 42		+ 0 03	68 9 43 98		44 60		+ 0 62		16 0 70	
31 23 57 21 6				4 33 51 30		52 39		+ 0 49	68 1 8 28		9 50		+ 1 22		16 1 29	
Ju									67 52 50 68		57 40		+ 6 72		16 2 48	
2 23 57 40 0				4 42 3 37		3 57		+ 0 20	67 45 8 35		8 40		+ 0 05		15 59 77	
3 23 57 50									67 37 42 58		42 60		+ 0 02		16 2 12	
4 23 57 59 4				4 50 15 94		16 32		+ 0 38	67 30 39 04		40 10		+ 1 06		16 3 72	
6 23 58 21									67 17 44 66		46 20		+ 1 54		16 2 10	
7 23 58 31 5				5 2 37 85		38 17		+ 0 32	6 11 53 88		54 90		+ 1 02		16 1 62	
8 23 58 43									67 6 25 83		27 70		+ 1 87		16 1 13	
11 3 59 18 5				5 19 11 20		11 46		+ 0 26	66 52 31 46		30 90		- 0 56		16 3 17	
13 23 59 43 3				5 27 29 12		29 45		+ 0 33	66 45 15 85		14 80		- 1 05		16 0 7	
19 0 0 47 8				5 48 16 32		16 64		+ 0 32	66 34 14 42		15 40		+ 0 98		15 9 31	
23 0 1 40									66 32 55 55		53 70		- 1 85		16 0 1	
25 0 2 5									66 31 42 65		41 60		- 1 05		16 1 57	
30 0 3 7									66 46 24 01		23 50		- 0 51		15 59 09	
J ly									66 53 55 61		55 90		+ 0 26		16 4 54	
2 0 3 31									66 58 20 00		18 40		- 1 60		16 2 27	
3 0 3 42									67 26 12 16		11 30		- 0 86		16 2 03	
8 0 4 33 9				7 6 57 84		58 36		+ 0 52	67 32 54 04		56 90		+ 2 86		16 3 3	
9 0 4 43 3				7 11 3 96		4 42		+ 0 46	67 40 5 81		5 80		- 0 01		16 2 87	
10 0 4 52 5				7 16 9 71		10 11		+ 0 40	68 12 31 31		30 40		- 0 91		16 3 51	
14 0 5 24 7				7 31 28 11		28 58		+ 0 44	68 21 29 10		33 10		+ 4 00		16 0 84	
15 0 5 31 6				7 35 31 69		32 05		+ 0 36	68 40 42 11		44 40		+ 2 29		16 1 88	
17 0 44									69 12 14 41		13 50		- 0 91		16 3 18	
20 0 5 58 6				7 55 41 52		41 53		+ 0 01	69 23 27 49		25 40		- 2 09		16 3 03	
21 0 6 21				7 59 41 55		41 76		+ 0 21	69 34 55 42		58 10		+ 2 68		16 3 72	
22 0 6 52				8 3 41 17		41 41		+ 0 24	69 59 5 13		5 00		- 0 13		16 2 86	
24 0 6 10									70 24 35 32		31 90		- 3 42		15 59 60	
26 0 6 12									70 61 20 32		16 80		- 3 52		16 0 26	
28 0 6 11									71 33 48 96		46 20		- 2 76		16 3 41	
31 0 6 7																
A g									73 6 50 79		48 60		- 2 19		15 59 93	
6 0 5 41 0				9 2 25 28		25 08		- 0 20	73 57 4 96		6 00		+ 1 04		16 0 51	
9 0 5 20									74 14 27 58		23 20		- 4 38		15 59 02	
10 0 5 12									74 31 57 41		55 70		- 1 71		16 1 48	
11 0 5 3									74 49 43 81		43 00		- 0 81		16 0 71	
12 0 4 54									75 7 50 48		44 80		- 5 68		16 0 17	
13 0 4 44									76 3 13 57		14 20		+ 0 63			
16 0 4 11 9				9 40 21 50		21 47		- 0 03	76 22 10 07		11 00		+ 0 93		16 0 42	
17 0 4 0 0				9 44 6 11		6 03		- 0 08	76 41 21 31		20 70		- 0 61		16 3 63	
18 0 3 47 3				9 47 49 96		50 06		+ 0 10	77 0 43 86		43 10		- 0 76		16 1 82	
19 0 3 34									77 40 7 54		4 10		- 3 44		16 0 70	
21 0 3 6 9				9 58 59 10		9 04		- 0 06	78 20 10 72		12 00		+ 1 28		15 59 56	
23 0 2 37									78 40 32 64		32 70		+ 0 06			
24 0 2 22									79 1 6 57		4 10		- 2 47		16 1 79	
25 0 2 6 4				10 13 44 66		44 27		- 0 39	79 21 42 93		46 00		+ 3 07		16 4 27	
26 0 1 50																
S pt									81 29 16 98		19 80		+ 2 82		16 0 17	
1 0 0 4									84 4 22 94		21 00		- 1 94		16 2 07	
7 23 57 48									84 26 56 60		56 20		- 0 40		16 2 68	
8 23 57 28									84 49 37 54		37 10		- 0 44		15 59 96	
9 23 7 7 1				11 11 19 33		49 73		+ 0 40								

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (Continued)

M	S	lar	Tim	f	A	R	f	m	A	R	f	m	Err	f	N	A	N	P	D	f	r	m	N	P	D	f	r	m	Err	f	N	A	M	a	n		
Ob	ti				Ob	ti			N	A							Ob	i				N	A									H	S	m	d		
1847					m																																
S	pt	10	23	56	46	5			11	15	25	23	25	66	+ 0	43	85	12	26	81	23	30										16	0	70			
		12	23	56	5												85	26	17	13	10	20										16	2	06			
		14	23	55	23	7			11	29	48	39	48	20	— 0	19	86	44	15	19	13	90											16	0	72		
		15	23	55	2												87	7	21	03	21	20											16	1	55		
		16	23	54	41												87	30	33	59	31	70											16	0	24		
		17	23	54	20												87	53	44	28	4	20											16	1	11		
		20	23	53	16	6			11	52	20	30	20	51	+ 0	21	89	3	34	56	39	20											16	5	99		
		21	23	51	53												90	37	11	43	11	80											16	1	88		
		26	23	51	12												91	23	58	07	61	00											16	1	41		
Oct		1	23	49	34												93	20	55	09	51	00											16	1	98		
		3	23	48	57												94	7	24	49	22	70											15	58	82		
		4	23	48	38	7			12	41	53	32	53	34	+ 0	02																		16	3	11	
		5	23	48	20	6			12	45	31	83	32	10	+ 0	27	91	3	46	87	43	00												16	3	65	
		7	23	47	47												95	39	46	61	49	00												16	3	89	
		8	23	47	30	3			12	56	30	99	30	82	— 0	17	96	2	43	06	4	70												16	4	71	
		10	23	46	58	4			13	3	52	10	52	13	+ 0	03	96	48	23	43	21	40												16	2	30	
		14	23	46	1												98	18	32	75	32	50												16	1	04	
		15	23	45	48												98	40	4	14	47	90												16	2	05	
		17	23	45	23												99	24	55	42	55	70												16	2	25	
		18	23	45	1	8			13	33	37	59	37	49	— 0	10	99	46	41	07	47	50												16	3	91	
		19	23	45	1												100	8	24	90	30	70												16	3	06	
		20	23	44	50	8			13	41	9	70	9	50	— 0	20	100	30	7	56	00													16	4	91	
		21	23	44	41	1			13	44	56	52	56	47	— 0	05	100	51	21	78	29	90												16	5	47	
		22	23	44	32												101	12	41	05	41	90												16	3	83	
		25	23	44	9	5			14	0	10	99	11	12	+ 0	13	102	15	20	94	27	80															
		26	23	44	3												102	35	54	00	60	00												16	3	79	
		27	23	43	58												102	56	24	59	20	60												16	4	43	
Nov		3	23	43	43												105	12	35	63	44	50												16	3	67	
		5	23	43	46												105	49	36	53	34	70												16	7	97	
		7	23	43	52	5			14	51	9	16	9	09	— 0	07	106	25	24	17	21	80												16	5	65	
		8	23	43	57												106	42	48	73	50	80													16	3	38
		9	23	44	2	0			14	59	11	85	11	97	+ 0	12	107	0	5	63	2	70												16	7	52	
		11	23	44	15												107	33	25	57	33	80												16	6	05	
		14	23	44	41												108	21	29	58	32	60															
		15	23	44	51	6			15	23	40	89	40	76	— 0	13	108	36	55	05	53	90												16	4	03	
		17	23	45	15	5											109	6	31	94	36	40												16	0	59	
		18	23	45	27	4			15	36	6	41	6	33	— 0	08	109	20	52	73	7	00															
		22	23	46	26	4											110	14	47	05	46	00												16	1	92	
		30	23	49	1												111	44	10	14	8	30												16	2	20	
Dec		5	23	51	0	9											112	26	45	09	40	20												16	0	33	
		8	23	52	19	3			17	1	50	91	50	59	— 0	32																					
		15	23	55	36	3											113	18	25	38	29	90															
		16	23	56	5	5											113	21	8	25	9	20												16	4	76	
		19	23	57	34	3																															
		20	23	58	4	2			17	54	55	18	55	08	— 0	10																					
		21	23	58	34	0			17	59	21	47	21	60	+ 0	13	113	27	15	80	23	20												16	8	95	
		22	23	59	4	0			18	3	47	75	48	17	+ 0	42	113	27	12	89	13	00												16	5	47	
		23	23	59	33	9			18	9	14	34	14	73	+ 0	39	113	26	30	90	34	00												16	3	80	

MEAN HORIZONTAL AND VERTICAL SEMIDIAMETERS OF THE SUN FROM EACH YEARS OBSERVATIONS

D t	N Ob	H S mid	N Ob	V s i
1831	176	16 1 15		
1832	258	1 52		
1833	257	1 30		
1835	266	1 82	141	16 1 59
1836 1837	489	1 72	150	1 77
1838	231	0 90		
1839	226	0 87		
1840	245	1 01		
1841	205	1 94		
1842	223	2 24		
1843	242	1 38		
1844	241	2 20		
1845	268	3 33		
1846	230	2 29		
1847	189	2 98		
Mean		16 1 78		16 1 68

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE MOON CENTER.

M a n S l T i m f				I II	A R f m	A R f r m	E f N A	N S	N P D f r m	N P D	E r f N A
O b r v t i				L i m b	O b r v t	N A		L i m b	O b t i	f r m N A	
1831					m						//
Feb	20	6	50 42 8	I	4 50 46 86	47 10	+ 0 24	S	72 41 41 77	37 47	— 4 30
	21	7	47 40 2	I	5 51 50 60	51 42	+ 0 82	S	71 15 47 84	45 90	— 1 94
	22	8	44 47 2	I	6 53 2 77	3 84	+ 1 07	N	71 4 29 30	33 49	+ 4 19
	23	9	40 58 3	I	7 53 18 77	20 17	+ 1 40	S	72 6 54 47	52 96	— 1 51
	25	11	27 16 8	I	9 47 45 20	46 19	+ 0 99	S	77 16 55 13	51 38	— 3 75
	26	12	17 48 7	I II	10 41 17 83	18 25	+ 0 42	N	80 56 42 19	41 45	— 0 74
	27	13	6 2 6	II	11 32 34 88	34 32	— 0 56	N	84 59 30 39	26 71	— 3 68
	28	13	51 23 4	II	12 22 0 34	1 48	+ 1 14	S	89 11 4 76	1 26	— 3 50
Mar	1	14	35 38 1	II	13 10 19 47	19 12	— 0 36	S	93 19 20 77	19 92	— 0 85
	2	15	19 18 7	II	13 58 4 12	4 37	+ 0 25	S	97 14 43 07	31 95	— 11 12
	3	16	3 6 0	II	14 45 54 77	54 56	— 0 21	S	100 47 50 81	51 61	+ 0 80
	4	16	47 29 8	II	15 34 21 29	22 37	+ 1 08	S	103 51 35 83	38 33	+ 2 50
	5	17	32 58 4	II	16 23 53 57	54 14	+ 0 57	S	106 18 37 72	41 24	+ 3 52
	6	18	19 49 1	II	17 14 47 50	47 17	— 0 33	S	108 2 0 95	5 97	+ 5 02
	21	6	40 22 8	I	6 34 44 74	44 87	+ 0 13				
	22	7	36 22 2	I	7 34 49 17	49 63	+ 0 16	N	71 36 25 67	23 35	— 2 32
	23	8	30 25 5	I	8 32 56 75	57 50	+ 0 75	N	73 23 48 31	46 27	— 2 04
	25	10	11 23 7	I	10 22 2 58	2 00	— 0 58	N	79 31 45 56	40 59	— 4 97
	26	10	58 31 1	I	11 13 12 39	12 45	+ 0 06				
	27	11	43 57 9	I	12 2 42 21	42 23	+ 0 02	N	87 32 57 94	49 21	— 8 73
	28	12	30 21 2	II	12 51 9 00	8 74	— 0 26	N	91 43 48 36	57 21	+ 8 85
	29	13	14 6 8	II	13 38 58 59	58 57	— 0 02	S	95 46 31 35	35 71	+ 1 36
	30	13	57 53 5	II	14 26 48 68	48 42	— 0 26	S	99 31 19 42	19 06	— 0 36
Ap r i l	2	16	13 22 7	II	16 54 27 93	27 93	0 00	S	107 35 0 46	47 15	— 13 31
	3	17	0 41 5	II	17 45 50 45	50 69	+ 0 24	S	108 48 41 00	40 59	— 0 41
	19	6	27 2 6	I	8 15 41 07	41 21	+ 0 14	N	72 34 11 07	8 32	— 2 75
	20	7	19 42 2	I	9 12 24 30	23 43	— 0 87	N	75 3 11 72	8 82	— 2 90
	21	8	9 27 2	I	10 6 12 37	12 38	+ 0 01	N	78 17 33 11	29 78	— 3 33
	22	8	56 41 2	I	10 57 29 56	28 91	— 0 65	N	82 3 10 30	59 40	— 10 90
	23	9	41 58 1	I	11 46 49 26	49 38	+ 0 12	N	86 6 43 69	46 05	+ 2 36
	25	11	9 23 5	I	13 22 21 27	21 09	— 0 18	N	94 23 56 67	52 83	— 3 84
	26	11	53 47 9	I II	14 9 49 70	50 07	+ 0 37	N	98 17 8 65	9 65	+ 1 00
	27	12	38 43 2	II	14 57 48 75	48 41	— 0 34	N	101 47 48 28	41 41	— 6 87
	29	14	9 15 8	II	16 36 27 97	27 70	— 0 27	N	107 6 42 08	36 07	— 6 01
	30	14	56 8 9	II	17 27 24 75	24 38	— 0 37	N	108 39 41 38	32 50	— 8 88
M y	1	15	43 59 3	II	18 19 18 85	18 28	— 0 57	N	109 20 55 35	59 02	+ 3 67
	2	16	32 29 9	II	19 11 54 57	53 96	— 0 61	N	109 6 58 72	2 80	+ 4 08
	3	17	21 26 4	II	20 4 54 44	54 64	+ 0 20	N	107 55 59 23	4 84	+ 5 61
	20	7	41 6 7	I	11 32 5 47	5 23	— 0 24	N	84 39 5 70	2 98	— 2 72
	21	8	2 22 0	I	12 20 23 57	23 17	— 0 40	N	88 50 11 33	18 14	+ 6 81
	22	9	8 36 3	I	13 7 41 19	41 05	— 0 14	N	93 0 22 70	19 64	— 3 06
	23	9	51 35 6	I	13 54 44 06	43 71	— 0 35	N	96 59 49 70	48 12	— 1 58
	24	10	34 56 5	I	14 42 9 07	8 87	— 0 20	N	100 40 6 61	10 18	+ 3 57
	25	11	19 9 0	I	15 30 26 04	25 86	— 0 18	N	103 52 33 28	34 11	+ 0 83
	26	12	5 34 1	I II	16 19 54 58	54 43	— 0 16	N	106 28 55 73	57 25	+ 1 52
	27	12	53 14 5	II	17 10 37 19	36 96	— 0 23	N	108 21 8 52	10 37	+ 1 85
	29	14	29 20 0	II	18 54 50 60	50 86	+ 0 26	N	109 29 10 70	15 12	+ 4 42
	30	15	18 3 6	II	19 47 38 64	39 05	+ 0 41	N	108 38 39 30	47 60	+ 8 30
	31	16	6 44 0	II	20 40 23 89	24 47	+ 0 58	N	106 52 14 28	15 75	+ 1 47
Jun	1	16	55 11 3	II	21 32 55 55	56 15	+ 0 60	N	104 12 57 11	10 62	+ 13 51
	20	8	33 31 1	I	14 26 50 71	0 03	— 0 68	N	99 22 35 62	35 93	+ 0 31
	21	9	17 17 3	I	15 14 40 83	39 04	— 1 79	N	102 46 52 91	57 73	+ 4 82
	28	14	53 7 7	II	21 16 59 65	0 47	+ 0 82	N	105 17 23 58	28 93	+ 5 35
	29	15	41 19 1	II	22 9 15 24	15 55	+ 0 31				
	30	16	29 8 1	II	23 1 8 80	9 46	+ 0 66	N	98 16 21 88	32 50	+ 10 62

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE MOON'S CENTER (Cont d)

M an S lar Tim f Ob rvat	I II Limb	A R f r m Ob rvat n.	A R f r m N A	Erro f N A	N S Limb	N P D f m Ob rvat	N P D f m N A	Err f N A
1831		m						
July 2 18 5 42.2	II	0 45 51.53	51.82	+ 0.29	N	89 15 48.40	3.48	+ 15.08
17 6 30 29.9	I	14 9 6.31	56.30	- 0.01	N	97 52 40.78	47.14	+ 6.6
18 7 14 11.3	I	14 57 41.82	41.78	- 0.04	N	101 29 8.78	13.31	+ 4.53
29 16 3 38.9	II	0 29 55.23	54.64	- 0.59	N	90 48 39.54	36.64	- 2.90
Aug 17 7 25 8.9	I	17 6 59.67	58.99	- 0.68	N	108 6 41.33	4.22	+ 0.89
22 11 30 42.0	I	21 32 57.00	56.61	- 0.39	N	104 28 8.08	8.12	+ 0.04
Sept 15 6 53 13.1	I	18 29 19.64	19.26	- 0.38	N	109 37 5.07	8.08	+ 3.01
16 7 42 2.8	I	19 22 14.21	13.84	- 0.37	S	109 18 35.49	37.87	+ 2.38
17 8 31 24.9	I	20 15 41.11	40.68	- 0.43	S	108 1 27.76	29.80	+ 2.10
20 11 0 22.6	I	22 56 52.94	53.08	+ 0.14	S	98 43 11.48	1.84	- 9.64
21 11 51 20.6	I II	23 50 52.31	52.71	+ 0.40	S	94 13 6.01	5.73	- 0.28
22 12 42 52.5	II	0 45 24.93	25.32	+ 0.39	N	89 2 57.52	54.85	- 2.67
Oct 14 6 22 17.7	I	19 52 39.31	38.87	- 0.44	S	108 53 8.35	0.82	- 7.53
17 8 48 41.1	I	22 31 16.43	16.46	+ 0.03	S	100 47 22.93	20.08	- 2.85
20 11 19 38.8	I	1 14 29.94	30.84	+ 0.90	S	86 46 41.63	36.33	- 5.30
21 12 15 16.5	II	2 12 2.77	3.30	+ 0.53	S	81 50 43.67	30.14	- 13.3
23 14 8 45.1	II	4 13 40.03	40.48	+ 0.45				
25 16 8 13.1	II	6 21 20.20	20.69	+ 0.49	S	70 7 28.64	20.98	- 7.66
29 19 49 19.6	II	10 18 55.17	55.63	+ 0.46	S	78 13 23.73	25.0	+ 1.32
Nov 19 11 49 41.2	I II	3 41 48.77	49.20	+ 0.43	S	75 23 29.42	27.89	- 1.53
21 13 53 33.6	II	5 52 44.40	44.52	+ 0.12	N	70 15 44.56	32.86	- 11.70
26 18 36 15.4	II	10 56 2.89	3.86	+ 0.97	S	80 45 55.91	47.64	- 8.27
Dec 11 5 20 46.9	I	22 39 37.06	37.17	+ 0.11	S	100 41 8.89	11.13	+ 2.24
12 6 7 15.0	I	23 30 8.79	8.71	- 0.08	S	96 33 36.86	28.40	- 8.46
13 6 54 23.4	I	0 21 22.85	23.19	+ 0.34	S	91 58 52.90	38.31	- 14.59
14 7 43 5.1	I	1 14 10.38	11.07	+ 0.69	S	87 7 51.69	49.53	- 2.16
15 8 34 15.4	I	2 9 27.26	27.39	+ 0.13	S	82 16 0.63	48.27	- 12.36
16 9 28 40.3	I	3 8 0.69	1.04	+ 0.35	S	77 41 59.02	53.76	- 5.26
19 12 34 31.2	II	6 23 52.24	52.26	+ 0.02	S	69 48 32.20	31.16	- 1.04
21 14 39 10.9	II	8 36 47.13	46.95	- 0.18	S	71 59 49.64	48.85	- 0.79
22 15 36 37.0	II	9 38 20.87	20.74	- 0.13	S	75 3 16.12	12.02	- 4.10
24 17 19 34.2	II	11 29 32.66	32.89	+ 0.23	S	83 18 19.04	6.45	- 12.59
1832								
Jan 13 8 9 54.9	I	3 39 24.36	25.16	+ 0.80	S	75 43 23.84	30.80	+ 6.96
14 9 7 41.1	I	4 41 18.97	19.60	+ 0.63	S	72 26 13.30	13.00	- 0.30
15 10 8 51.0	I	5 46 35.83	36.25	+ 0.42	S	70 20 5.35	58.60	- 6.75
17 12 17 27.8	I	8 3 5.56	5.80	+ 0.24	S	70 45 51.30	51.40	+ 0.10
25 19 0 42.0	II	15 17 8.50	8.87	+ 0.37	N	102 47 8.81	9.10	+ 0.29
Feb 9 6 2 23.1	I	3 17 56.76	56.60	- 0.16	S	77 10 8.86	57.09	- 11.77
10 6 56 35.3	I	4 16 16.24	16.33	+ 0.09	S	73 38 41.27	32.66	- 8.61
11 7 53 58.7	I	5 17 47.39	47.63	+ 0.24	S	71 6 33.79	24.33	- 9.46
12 8 53 59.9	I	6 21 55.39	55.93	+ 0.54	N	69 51 6.45	9.45	+ 3.00
13 9 55 15.8	I	7 27 18.91	19.34	+ 0.43	N	70 4 3.54	1.15	- 2.39
14 10 56 2.2	I	8 32 10.31	11.20	+ 0.89	N	71 45 54.43	59.18	+ 4.75
15 11 54 42.0	I	9 34 55.99	56.02	+ 0.03	N	74 46 3.50	5.56	+ 2.06
21 16 54 22.9	II	14 56 55.07	54.77	- 0.30	S	101 21 21.56	23.93	+ 2.37
23 18 26 24.5	II	16 37 4.75	4.81	+ 0.06				
Mar 11 7 44 35.0	I	7 2 43.08	43.13	+ 0.05	N	69 43 0.57	8.60	+ 8.03
12 8 43 37.7	I	8 5 50.95	51.62	+ 0.67	N	70 49 36.75	33.74	- 3.01
13 9 41 21.6	I	9 7 39.63	40.21	+ 0.58	N	73 15 23.84	21.76	- 2.08
14 10 36 52.2	I	10 7 14.85	14.60	- 0.25	N	76 46 34.03	32.84	- 1.19
15 11 29 49.5	I	11 4 15.67	15.42	- 0.25	N	81 4 32.02	26.90	- 5.12

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE MOON'S CENTER (Cont'd)

M an S lar Tim	I II	A R fr m	A R fr m	E f N A	N S	N P D from	N P D	E ro f N A
Ob tl	L mb	Ob tl	N A.		Limb	Ob tl	from N A	
1832								
M r 16 12 21 28.9	I II	11 58 55.41	55 13	-0.38	N	85 49 8.91	5 19	- 3.72
17 13 11 12.2	II	12 51 40.95	40 96	+0.01	S	90 41 8.93	15 01	+ 6.08
18 13 58 34.2	II	13 43 7.1	7 63	+0.12	S	9 23 36.83	30 11	- 6.72
20 15 31 51.4	II	15 24 33.67	33 24	-0.43	S	103 28 6.40	5 40	- 1.00
21 16 18 40.9	II	16 15 26.71	26 81	+0.10	S	106 30 45.00	44 27	- 0.73
22 17 5 57.9	II	17 6 47.65	47 50	-0.15	S	108 44 5.88	10 10	+ 4.22
23 17 53 42.9	II	17 58 37.12	36 55	-0.57	N	110 3 23.81	29 47	+ 5.66
April 8 6 38 13.4	I	7 46 32.56	32 61	+0.05	N	70 8 5.72	32	+ 1.60
9 7 35 21.5	I	8 47 46.33	46 59	+0.26	N	72 8 57.40	1 40	+ 4.00
10 8 30 14.4	I	9 46 43.63	44 03	+0.40	N	75 17 21.58	21 64	+ 0.06
11 9 22 37.5	I	10 43 9.17	10 08	+0.91	N	79 16 34.41	48 99	+ 14.58
12 10 12 40.8	I	11 37 18.07	18 18	+0.11	N	83 49 13.77	27 66	+ 13.89
13 11 1 0.9	I	12 29 39.65	39 70	+0.05	N	88 37 48.6	48 12	- 0.50
14 11 48 10.1	I	13 20 52.62	52 76	+0.14	N	93 25 23.01	28 39	+ 5.38
15 12 36 56.2	II	14 11 39.37	39 07	-0.30	N	97 58 12.33	13 24	+ 0.91
17 14 10 34.3	II	15 53 25.57	25 45	-0.12	S	105 28 17.12	17 62	+ 0.50
18 14 58 6.0	II	16 45 1.35	1 15	-0.20	N	108 6 28.87	33 61	+ 4.74
21 17 22 35.6	II	19 21 44.75	43 75	-1.00	N	110 26 13.95	15 63	+ 5.68
May 6 5 31 15.9	I	8 29 47.81	48 18	+0.37	N	71 9 56.37	58 15	+ 1.78
8 7 19 59.5	I	10 26 39.31	39 96	+0.65	N	77 47 30.38	31 94	+ 1.56
9 8 10 1.8	I	11 20 45.24	45 17	-0.07	N	82 10 37.97	36 55	- 1.42
11 9 44 22.9	I	13 3 12.53	12 78	+0.25	N	91 40 32.52	34 97	+ 2.05
12 10 30 14.3	I	13 53 7.89	7 75	-0.14	N	96 18 20.30	27 90	+ 7.60
13 11 16 8.1	I	14 43 4.99	4 92	-0.07	N	100 34 21.26	33 47	+ 12.21
14 12 4 38.9	II	15 33 36.83	37 08	+0.25	N	101 17 44.28	51 04	+ 6.76
Ju e 6 6 56 40.8	I	11 57 33.85	34 01	+0.16	N	85 15 36.36	40 66	+ 4.30
7 7 43 22.9	I	12 48 19.53	19 20	-0.33	N	90 4 3.11	6 55	+ 3.44
9 9 14 8.9	I	14 27 12.68	12 70	+0.02	N	99 9 28.18	34 86	+ 6.68
10 9 59 42.6	I	15 16 5.13	50 82	-0.31	N	103 4 5.81	16 89	+ 11.08
12 11 33 18.9	I	16 58 37.00	37 43	+0.43	N	108 49 40	5 13	- 0.27
Sept. 4 7 46 34.6	I	18 42 26.51	26 75	+0.24	N	111 3 35.77	35 58	- 0.19
5 8 34 52.0	I	19 34 48.23	47 69	-0.54	S	110 41 0.05	5 98	- 4.07
O t 2 6 28 23.3	I	19 14 26.28	26 18	-0.10	S	111 8 57.89	52 70	- 5.19
3 7 16 28.7	I	20 6 35.40	35 41	+0.01	S	110 8 54.58	53 70	- 0.88
4 8 3 45.0	I	20 57 55.69	55 76	+0.07	S	108 11 56.29	56 64	+ 0.35
5 8 50 7.7	I	21 48 22.13	22 67	+0.54	S	105 23 16.25	18 96	+ 2.71
8 11 6 7.0	I	0 16 33.52	34 30	+0.78	S	93 2 56.87	50 65	- 6.22
9 11 53 2.6	I	1 7 31.58	32 16	+0.58	S	88 10 52.49	56 30	+ 3.81
30 5 9 10.2	I	19 45 23.35	23 67	+0.22	S	110 56 38.07	39 03	+ 0.96
31 5 6 48.3	I	20 37 5.27	4 91	-0.36	S	109 22 13.11	15 55	+ 2.44
No 1 6 43 17.1	I	21 27 37.76	37 62	-0.14	S	106 54 7.80	9 19	+ 1.39
2 7 28 45.1	I	22 17 9.82	9 63	-0.29	S	103 38 48.97	53 20	+ 4.23
3 8 13 34.7	I	23 6 2.41	2 67	+0.26	S	99 43 32.16	38 52	+ 6.36
4 8 58 17.9	I	23 54 49.34	49 75	+0.41	S	95 16 35.20	38 52	+ 3.32
5 9 43 36.4	I	0 44 12.66	13 19	+0.53	S	90 27 39.00	40 38	+ 1.38
15 18 55 3.8	II	10 34 29.01	30 15	+1.14	S	77 32 51.22	0 53	+ 9.31
29 5 22 33.2	I	21 57 1.06	1 24	+0.18	S	105 19 19.59	18 73	- 0.86
30 6 6 54.9	I	22 45 28.49	28 31	-0.18	S	101 42 21.19	18 44	- 2.75
D c 3 8 19 45.3	I	1 10 30.60	30 76	+0.16				
4 9 6 44.7	I	2 1 36.18	36 67	+0.49	S	83 5 11.69	8 63	- 3.06
5 9 56 40.4	I	2 55 39.04	39 36	+0.32	S	78 19 16.73	13 62	- 3.11
6 10 50 18.2	I	3 53 23.25	23 62	+0.37	S	74 4 35.74	34 58	- 1.16

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE MOON'S CENTER, (C n t n u e d)

M a n S I	T i m e	I I	A R f r m	A R f m	E r r	N S	N P D from	N P D	E r r
O b	t i	L i m b	O b e r t i	N A.	f N A	L i m b	O b t i	f r m N A.	f N A
1832	m		m				/	/	
D	7 11 49 16	I	4 55 626	6 80	+ 0 54	S	70 44 37 09	33 92	- 3 17
1833									
J	4 10 27 12 1	I	5 24 37 10	37 51	+ 0 41	S	69 39 10 14	2 36	- 7 78
	5 11 29 34 3	I	6 31 7 37	8 12	+ 0 75	N	68 17 31 07	31 66	+ 0 59
	13 18 52 56 4	II	14 25 0 57	0 51	- 0 06	S	98 55 38 55	38 35	- 0 20
	29 6 23 36 5	I	2 58 48 79	49 02	+ 0 23	S	78 9 1 80	58 70	- 3 10
	30 7 14 5 9	I	3 53 25 33	25 71	+ 0 38	S	74 7 53 75	47 84	- 5 91
	31 8 8 45 4	I	4 52 11 97	12 78	+ 0 81	S	70 53 44 07	41 71	- 2 36
Feb	1 9 7 36 9	I	5 55 12 42	13 28	+ 0 86	N	68 48 39 22	35 95	- 3 27
	4 12 17 6 6	I	9 15 52 80	53 28	+ 0 48	N	72 3 27 90	30 80	+ 2 90
	27 5 59 11 0	I	4 28 42 29	42 35	+ 0 06	S	71 53 34 27	34 18	- 0 09
	28 6 54 14 9	I	5 27 53 21	53 42	+ 0 21	S	69 23 43 09	39 38	- 3 71
M	1 7 52 42 6	I	6 30 29 35	29 97	+ 0 62	N	68 10 5 04	4 74	- 0 30
	2 8 53 30 9	I	7 35 24 87	25 79	+ 0 92	N	68 27 30 88	27 54	- 3 34
	3 9 54 57 0	I	8 40 57 43	58 17	+ 0 74	N	70 21 36 50	36 38	- 1 12
	4 10 55 17 0	I	9 45 22 75	23 16	+ 0 41	N	73 45 31 84	33 7	+ 1 53
	6 12 51 2 6	II	11 47 4 53	5 01	+ 0 48	N	83 41 53 25	57 52	+ 4 27
	28 5 44 54 8	I	6 8 46 19	46 47	+ 0 28	N	68 11 19 99	15 63	- 4 36
	29 6 43 14 3	I	7 11 12 59	13 08	+ 0 49	N	67 56 18 87	19 25	+ 0 38
	30 7 42 26 3	I	8 14 30 85	31 44	+ 0 59	N	69 12 0 29	1 25	+ 0 96
	31 8 41 6 7	I	9 17 17 69	17 81	+ 0 12				
Apr 1	1 9 38 13 6	I	10 18 28 26	28 94	+ 0 68	N	75 56 36 05	38 60	+ 2 55
	2 10 33 19 5	I	11 17 38 73	39 36	+ 0 62	N	80 54 30 52	26 10	- 4 42
	3 11 26 33 9	I	12 14 57 43	57 85	+ 0 42	N	86 26 7 61	7 97	+ 0 36
	4 12 20 41 8	II	13 10 59 47	59 69	+ 0 22	N	92 7 41 44	38 63	- 2 81
	27 6 34 49 4	I	8 57 5 13	5 95	+ 0 82	N	70 38 47 18	47 71	+ 0 53
	28 7 30 56 9	I	9 57 17 49	18 17	+ 0 68	N	74 11 15 71	13 71	- 2 00
	29 8 24 57 9	I	10 55 22 76	23 42	+ 0 66	N	78 44 27 64	28 46	+ 0 82
	30 9 17 4 8	I	11 51 33 69	34 30	+ 0 61	N	83 58 42 59	44 58	+ 1 99
M y	1 10 7 52 4	I	12 46 25 40	25 88	+ 0 48	N	89 32 49 84	49 90	+ 0 06
	2 10 58 4 5	I	13 40 42 26	42 41	+ 0 15	N	95 5 43 49	45 18	+ 1 69
	3 11 49 30 2	II	14 35 8 40	8 58	+ 0 18				
June	28 9 16 19 3	I	15 43 24 20	24 19	- 0 01	N	105 43 36 58	42 72	+ 6 14
	29 10 6 36 0	I	16 37 46 29	46 39	+ 0 10	N	109 4 55 20	58 31	+ 3 11
	30 10 57 52 1	I	17 33 7 06	7 45	+ 0 39	S	111 22 52 02	51 85	0 17
July	1 11 50 39 6	II	18 28 54 67	54 80	+ 0 13	N	112 30 43 43	42 26	- 1 17
	25 7 13 57 0	I	15 27 8 90	8 75	- 0 15	N	104 32 10 41	15 23	+ 4 82
	29 10 35 58 3	I	19 5 29 80	29 60	- 0 20	S	112 35 55 13	50 88	- 4 25
A g	29 11 44 33 0	II	22 15 24 27	23 94	- 0 33				
S p t	21 6 28 5 0	I	18 29 50 23	50 23	0 00	S	112 49 40 60	39 39	- 1 21
	26 10 25 13 6	I	22 47 15 51	15 71	+ 0 20	S	102 15 5 16	2 03	- 3 13
Oct	20 6 2 49 4	I	19 58 49 86	49 91	+ 0 05	S	112 16 57 12	56 49	- 0 63
	21 6 51 35 8	I	20 51 39 44	39 46	+ 0 02	S	110 19 41 20	40 66	- 0 54
	22 7 38 1 6	I	21 42 7 86	8 49	+ 0 63	S	107 27 34 73	34 16	- 0 57
	23 8 22 22 5	I	22 30 31 63	31 80	+ 0 17	S	103 51 1 50	4 71	+ 3 21
	25 9 46 55 7	I	0 3 10 48	10 93	+ 0 45	S	95 4 12 89	10 67	- 2 22
Nov	18 5 32 2 9	I	21 22 17 50	17 08	- 0 42				
	19 6 17 31 8	I	22 11 48 79	48 78	- 0 01	S	105 34 3 35	13 88	+ 10 53
	20 7 0 53 7	I	22 59 13 22	12 92	- 0 30	S	101 34 17 68	18 31	+ 0 63

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE MOON'S CENTER (*Continued*)

M S I Tim f	I II	A R f m	A R from	Erro f N A	N S	N P D f m	N P D	E f N A
Ob rv tl	Limb	Ob tl	N A		Limb	Ob rv l	f m N A	
1833								
Nov 21 7 42 51.1	I	23 45 12 63	12 40	-0 23	S	97 6 22 93	26 00	+ 3 07
22 8 24 14.2	I	0 30 37 87	37 92	+0 05	S	92 19 41 60	37 58	- 4 02
De 18 37 47.7	I	23 26 16 13	16 54	+0 41	S	99 7 39 14	39 25	+ 0 11
19 6 19 4.7	I	0 11 36 25	35 88	-0 37	S	94 28 38 13	35 58	- 2 55
20 7 0 5.0	I	0 56 40 13	39 98	-0 15	S	89 37 11 80	8 81	- 2 99
22 8 25 22.2	I	2 30 77	5 51	-0 26	S	79 53 52 01	43 22	- 8 79
23 9 11 38.6	I	3 20 28 41	28 63	+0 22	S	75 24 46 11	41 51	- 4 60
24 10 1 30.9	I	4 14 27 44	28 00	+0 56	S	71 31 17 90	11 93	- 5 97
25 10 55 25.3	I	5 12 26 10	26 94	+0 84	N	68 32 50 49	48 93	- 1 56
26 11 54 3.1	I II	6 14 57 3	6 25	+0 52	N	66 49 53 39	54 06	+ 0 67
27 12 55 6.5	II	7 18 15	5 58	+0 43	N	66 38 59 44	6 05	+ 6 61
1834								
Ja 17 5 36 6.0	I	1 22 49 79	49 97	+0 18	S	86 45 4 44	2 50	- 1 94
18 6 17 56.9	I	2 8 4 64	45 50	-0 14	S	81 57 9 08	3 78	- 1 30
19 7 1 54.8	I	2 56 48 77	48 73	-0 04	S	77 23 4 50	56 58	- 7 92
20 7 48 58.4	I	3 47 59 42	59 67	+0 25	S	73 15 39 77	35 32	- 4 45
21 8 39 57.7	I	4 43 5 70	6 18	+0 48	S	69 51 32 06	25 77	6 29
22 9 35 9.8	I	5 42 25 44	25 68	+0 24	S	67 30 14 45	8 83	- 5 62
23 10 34 0.2	I	6 45 24 22	24 71	+0 49	N	66 31 53 81	51 89	- 1 92
24 11 35 1.3	I	7 50 31 05	31 73	+0 68	N	67 11 24 39	27 12	+ 2 73
25 12 38 29.2	II	8 55 45 76	46 69	+0 93	N	69 32 33 12	34 74	+ 1 62
F b 16 5 40 43.6	I	3 25 48 6	48 56	+0 09	S	74 45 11 17	9 55	- 1 62
17 6 28 35.5	I	4 17 46 58	46 77	+0 19	S	71 6 8 31	5 91	- 2 40
18 7 20 17.5	I	5 13 35 89	35 72	-0 17	S	68 18 54 90	51 46	- 3 41
19 8 15 53.5	I	6 13 19 86	19 77	-0 09	N	66 41 45 43	41 54	3 83
20 9 14 41.8	I	7 16 15 27	15 83	+0 36	N	66 31 59 80	59 79	- 0 01
21 10 15 12.1	I	8 20 52 06	52 70	+0 64	N	68 1 5 80	4 30	- 1 50
22 11 15 30.6	I	9 25 18 71	19 60	+0 89	N	71 8 49 31	50 46	+ 1 15
23 12 15 27.8	I II	10 28 10 37	11 03	+0 66	N	70 42 12 18	17 57	+ 3 39
24 13 13 2.3	II	11 28 43 22	43 90	+0 68	N	81 17 26 25	31 52	+ 5 27
1835								
Feb 6 6 27 36.2	I	3 32 25 20	25 06	-0 19	S	72 41 48 30	43 17	- 5 18
7 7 13 49.1	I	4 22 45 55	45 26	-0 29	S	69 8 56 51	47 47	- 9 04
8 8 3 16.2	I	5 16 18 50	18 57	+0 07	S	66 30 51 95	44 44	- 7 51
9 8 55 53.7	I	6 13 3 01	2 96	-0 05	N	65 2 17 52	16 03	- 1 49
10 9 51 0.6	I	7 12 16 14	16 07	-0 07	N	64 56 49 94	45 74	- 4 20
11 10 47 18.1	I	8 12 40 01	40 12	+0 11	N	66 22 34 65	31 40	- 3 25
12 11 43 18.9	I	9 12 45 75	46 57	+0 82	N	69 19 21 37	22 50	+ 1 13
13 12 40 15.6	II	10 11 33 17	33 04	-0 13	N	73 37 58 90	3 78	+ 4 88
15 14 24 4.2	II	12 3 33 95	34 29	+0 34	S	85 4 24 48	22 23	- 2 25
17 16 4 54.0	II	13 52 23 20	23 96	+0 76				
Ma 8 6 44 14.4	I	5 47 27 84	27 82	-0 02				
9 7 37 17.8	I	6 44 37 86	37 76	-0 10	N	64 34 57 73	53 19	- 4 54
10 8 32 10.1	I	7 43 36 53	36 60	+0 07	N	65 19 34 67	30 15	- 4 52
11 9 27 41.0	I	8 43 13 07	13 12	+0 05	N	67 32 38 93	36 42	- 2 51
13 11 16 34.6	I	10 40 16 06	16 09	+0 03	N	76 11 53 78	53 25	- 0 53
14 12 10 19.0	I II	11 37 0 29	0 54	+0 25	N	82 7 38 54	41 27	+ 2 73
Apr 1 7 7 14 51.0	I	8 16 28 09	27 98	-0 11	N	66 7 40 71	31 19	- 9 52
8 8 8 38.6	I	9 14 20 97	20 59	-0 38	N	69 6 32 27	24 63	- 7 64
10 9 53 53.5	I	11 7 45 55	45 49	-0 06	N	78 50 59 67	58 94	- 0 73
11 10 45 36.8	I	12 3 32 52	32 84	+0 32	N	80 6 43 88	44 74	+ 0 86
12 11 37 36.2	I	12 59 37 59	36 84	-0 75	N	91 49 11 77	10 95	- 0 82
13 12 31 58.1	I II	13 56 57 79	57 65	-0 14	N	98 30 58 34	5 96	+ 7 62
May 5 6 0 5.4	I	8 51 52 50	52 81	+0 26	N	67 36 52 10	50 10	- 2 00

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE MOON'S CENTER (*Continued*)

M an Sol	Time of	I II	A R from	A R from	Err of N A	N S	N P D from	N P D	Err of N A
Ob	tion	Limb	Ob rv tl	N A		Limb	Ob tl	from N A	
1835									
M y	8 8 32 36 3	I	11 36 36 38	36 46	+ 0 08	N	81 53 14 22	15 26	+ 1 04
	9 9 22 49 2	I	12 30 54 69	54 90	+ 0 21	N	88 17 5 48	8 08	+ 2 60
	10 10 14 14 0	I	13 26 25 23	25 49	+ 0 26	N	94 57 52 71	54 59	+ 1 88
	11 11 7 56 1	I	14 24 14 27	14 87	+ 0 60	N	101 28 51 08	47 28	+ 3 80
	12 12 6 2 7	I II	15 25 17 93	18 96	+ 1 03	N	107 18 45 55	53 17	+ 7 62
June	5 7 14 2 9	I	12 8 12 45	12 22	- 0 23	N	85 31 49 20	54 02	+ 4 82
	7 8 53 37 5	I	13 55 57 95	58 17	+ 0 22	N	98 22 5 53	1 85	+ 7 32
	8 9 47 22 9	I	14 53 51 04	51 25	+ 0 21	N	104 27 31 13	41 79	+ 10 66
	9 10 45 11	I	15 55 37 90	38 24	+ 0 34	N	109 41 26 26	33 93	+ 7 67
	10 11 47 44 7	I II	17 1 17 83	18 21	+ 0 38	N	113 32 28 34	34 97	+ 6 63
J ly	4 6 46 31 2	I	13 34 57 22	57 18	- 0 04	N	96 2 29 01	32 62	+ 3 61
	6 8 31 10 2	I	15 27 50 38	50 15	- 0 23	N	107 34 53 55	58 71	+ 5 16
	9 11 4 17 4	I	18 43 21 14	21 60	+ 0 46	S	115 50 24 25	28 76	+ 4 51
A g	2 6 24 49 5	I	15 7 34 23	34 85	+ 0 62	N	106 0 18 35	20 48	+ 2 13
	3 7 19 56 5	I	16 6 46 89	47 07	+ 0 18	N	110 40 56 50	55 53	- 0 97
	4 8 18 33 2	I	17 9 32 56	32 63	+ 0 07	N	114 2 33 04	33 17	+ 0 13
	5 9 19 44 6	I	18 14 52 10	52 40	+ 0 30	N	115 44 21 21	22 22	+ 1 01
	6 10 21 28 2	I	19 20 41 23	41 84	+ 0 61				
S pt	1 7 12 6 6	I	17 53 19 39	19 07	- 0 32	N	115 35 17 23	19 32	+ 2 09
	4 10 8 5 8	I	21 1 33 63	34 39	+ 0 76				
	6 11 49 9 3	I	22 50 43 40	44 41	+ 1 01	S	102 44 59 61	49 23	- 10 38
	29 6 7 15 6	I	18 38 42 10	42 38	+ 0 28	S	116 18 51 88	52 51	+ 0 63
O t	2 8 56 11 1	I	21 39 48 66	49 24	+ 0 58	S	109 19 31 57	27 09	- 4 48
	4 10 30 40 5	I	23 22 23 07	23 88	+ 0 81				
	5 11 13 54 8	I	0 9 40 07	40 87	+ 0 80	S	93 46 4 82	55 73	- 9 09
	29 6 53 36 9	I	21 23 15 82	16 16	+ 0 34				
N v	5 12 1 19 8	II	2 57 24 30	24 65	+ 0 35	N	74 20 15 73	14 81	- 0 92
	28 7 12 5 5	I	23 40 4 78	4 46	- 0 32	S	97 28 8 69	3 72	- 4 37
D	2 9 57 35 8	I	2 41 48 36	48 64	+ 0 28	S	75 53 14 11	20 91	+ 6 80
	3 10 41 4 6	I	3 29 22 40	22 15	- 0 25	S	71 29 15 27	9 01	- 6 26
	27 6 33 15 9	I	0 55 27 55	28 14	+ 0 59	S	88 4 47 91	41 35	- 6 6
	28 7 14 20 0	I	1 40 35 95	36 58	+ 0 63	S	82 28 31 72	21 28	- 10 44
	29 7 55 46 7	I	2 26 6 88	7 51	+ 0 63				
	30 8 38 34 8	I	3 12 58 89	59 22	+ 0 33	S	72 50 24 91	14 69	- 10 22
	31 9 23 25 4	I	4 1 54 65	55 15	+ 0 50	S	68 57 24 28	12 34	- 11 94
1836									
J n	2 11 0 18 4	I	5 46 59 37	59 07	- 0 30	N	64 6 50 17	48 39	- 1 78
	3 11 51 31 4	I	6 42 18 46	18 46	0 00	N	63 30 43 29	43 15	- 0 14
	25 5 51 49 1	I	2 8 15 64	15 83	+ 0 19	S	79 7 55 60	42 98	- 12 62
	26 6 34 29 8	I	2 55 0 18	0 79	+ 0 61				
	27 7 18 44 8	I	3 43 21 21	21 48	+ 0 27				
	28 8 5 11 4	I	4 33 52 99	53 04	+ 0 05	S	66 48 23 00	17 22	- 5 78
	31 10 36 37 1	I	7 17 35 39	35 16	- 0 23	N	63 47 24 64	22 33	- 2 31
Feb	1 11 28 26 5	I	8 13 29 73	29 53	- 0 20	N	65 27 15 53	16 17	+ 0 64
	2 12 20 17 1	I II	9 8 19 24	19 33	+ 0 09	N	68 25 35 21	36 75	+ 1 54
	26 7 36 11 8	I	5 59 10 51	10 89	+ 0 38	S	63 32 32 39	35 58	+ 3 19
	27 8 27 34 0	I	6 54 38 38	38 96	+ 0 58	N	63 19 10 27	6 90	- 3 37
	28 9 19 24 1	I	7 50 33 56	33 39	- 0 17	N	64 27 47 28	44 60	- 2 68
	29 10 10 40 3	I	8 45 54 09	53 71	- 0 38	N	66 57 29 76	29 61	- 0 15
Mar	1 11 0 38 8	I	9 39 56 50	56 01	- 0 49	N	70 42 1 30	0 18	- 1 12

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE MOON'S CENTER, (Continued)

M S I Tim f	I II	A. R. fr m	A. R. fr m	Err. f N A	N S	N P D fr m	N P D	E. f N A
Ob rv tl	Limb	Ob rv tl n.	N A		Limb	Ob rv tl	fr m N A.	
1836		m						
Mar 2 11 49 44	I	10 32 25 39	25 03	- 0 36	N	75 30 16 01	17 30	+ 1 29
3 12 38 22 4	II	11 23 40 54	40 22	- 0 32	N	81 8 27 67	29 74	+ 2 07
25 6 18 10 5	I	6 31 20 65	20 63	- 0 02	N	63 1 8 10	2 29	- 5 81
26 7 9 30 7	I	7 26 45 56	46 18	+ 0 62	N	63 35 41 12	36 67	- 4 45
27 8 0 33 2	I	8 21 53 84	53 55	- 0 29	N	65 31 10 68	7 96	- 2 72
28 8 50 36 2	I	9 15 59 88	59 94	+ 0 06	N	68 43 43 94	39 82	- 4 12
29 9 39 20 5	I	10 8 47 36	46 82	- 0 54	N	73 5 18 71	16 22	- 2 49
30 10 26 53 2	I	11 0 23 89	23 66	- 0 23	N	78 24 43 74	42 58	- 1 16
31 11 13 49 9	I	11 51 24 81	24 72	- 0 09	N	84 27 46 31	46 04	- 0 27
Ap l 1 12 2 9 2	III	12 42 44 91	44 96	+ 0 05	N	90 57 25 86	27 82	+ 1 96
24 6 41 32 4	I	4 53 1 31	1 33	+ 0 02	N	67 4 26 17	23 90	- 2 27
26 8 16 52 9	I	10 36 29 49	29 66	+ 0 17	N	75 43 24 88	24 95	+ 0 07
27 9 3 11 1	I	11 26 51 58	51 38	- 0 20	N	81 23 27 09	27 44	+ 0 35
28 9 49 36 8	I	12 17 21 58	21 56	- 0 02	N	87 40 2 53	4 10	+ 1 57
29 10 37 16 4	I	13 9 6 85	7 03	+ 0 18	N	94 16 18 79	20 31	+ 1 52
30 11 27 25 0	I	14 3 21 86	22 07	+ 0 21	N	100 50 31 28	36 14	+ 4 86
M y 26 8 25 39 3	I	12 43 33 97	34 11	+ 0 14	N	90 1 43 49	46 89	+ 3 40
28 10 4 37 5	I	14 30 45 25	45 40	+ 0 15	N	103 52 12 36	15 25	+ 2 89
J ly 26 10 35 18 7	I	18 54 15 57	16 11	+ 0 54	S	117 1 31 6	30 82	- 0 83
Aug 21 7 15 25 1	I	17 16 17 22	17 66	+ 0 44	N	116 3 26 18	24 25	- 2 23
S pt 18 6 10 7 3	I	18 1 11 79	12 18	+ 0 39	N	117 18 39 56	36 47	- 3 09
19 7 12 46 9	I	19 7 58 78	59 40	+ 0 62	S	117 10 14 15	8 94	- 5 21
20 8 14 24 9	I	20 13 42 79	43 29	+ 0 50	S	115 4 37 30	27 46	- 9 84
22 10 7 26 7	I	22 14 51 33	52 24	+ 0 91	S	106 7 15 00	1 04	- 13 96
23 10 58 6 6	I	23 9 34 23	35 11	+ 0 88	S	100 6 46 63	32 64	- 13 99
Oct 17 6 8 37 8	I	19 54 1 84	2 46	+ 0 62	S	116 2 3 16	32 99	- 2 17
18 7 7 18 0	I	20 56 46 03	46 63	+ 0 60	S	112 45 54 08	50 62	- 3 46
19 8 1 49 3	I	21 55 20 36	21 13	+ 0 77	S	108 6 3 00	54 81	- 8 19
20 8 52 20 8	I	22 49 54 74	55 19	+ 0 45	S	102 28 15 36	4 43	- 10 93
21 9 39 44 0	I	23 41 20 27	20 86	+ 0 59	S	96 16 32 10	22 86	- 9 24
22 10 2 7 1	I	0 30 46 95	47 37	+ 0 42	S	89 52 27 76	16 28	- 11 48
N v 17 7 37 48 6	I	23 25 32 91	33 42	+ 0 51	S	98 15 4 72	57 53	- 7 19
18 8 22 54 1	I	0 14 40 50	40 93	+ 0 43	S	91 58 57 00	47 99	- 9 01
22 11 21 41 3	I	3 29 45 94	46 08	+ 0 14	N	69 41 3 50	11 98	+ 8 48
23 12 12 28 7	II	4 22 28 07	27 74	- 0 33	N	66 1 24 34	22 29	- 2 05
D 16 7 5 57 4	I	0 47 54 87	55 21	+ 0 34	S	87 30 9 40	0 85	- 8 55
17 7 49 25 3	I	1 35 25 93	26 39	+ 0 46	S	81 28 24 43	15 49	- 8 94
18 8 33 18 6	I	2 23 25 05	25 33	+ 0 28	S	75 55 32 30	24 88	- 7 42
19 9 18 38 8	I	3 12 48 90	49 22	+ 0 32	S	71 4 21 47	12 10	- 9 37
20 10 5 57 7	I	4 4 13 34	13 11	- 0 23	S	67 7 29 87	22 91	- 6 96
21 10 55 20 5	I	4 57 42 05	41 49	- 0 56	N	64 17 15 27	9 99	- 5 28
1837								
Jan 17 8 51 51 2	I	4 40 18 98	19 64	+ 0 66				
18 9 42 6 0	I	5 34 42 28	41 96	- 0 32	N	63 0 5 83	3 84	- 1 99
19 10 33 19 6	I	6 29 58 78	58 60	- 0 18	N	62 24 31 24	30 43	- 0 81
20 11 24 16 6	I	7 25 0 20	59 93	- 0 27	N	63 11 2 65	1 93	- 0 72
21 12 14 58 5	II	8 18 40 27	39 99	- 0 28	N	65 15 40 54	43 74	+ 3 20
I b 12 5 58 36 7	I	3 29 5 36	5 50	+ 0 14	S	69 13 14 77	9 62	- 5 15
13 6 47 16 4	I	4 21 51 26	51 57	+ 0 31	S	65 38 26 59	26 14	- 0 45
14 7 37 27 3	I	5 16 7 48	7 90	+ 0 42	S	63 17 24 05	24 65	+ 0 60

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE MOON'S CENTER (Continued)

M an S lar Tim f	I II	A R f r m	A R f m	Err o f N A	N S	N P D from	N P D	Err f N A
Ob t i n.	Limb	Ob r v t i	N A		Limb	Ob r v t i	f m N A	
1837		m						
F b 15 8 28 35 5	I	6 11 2074	21 16	+ 0 42	N	62 16 33 30	31 14	— 2 16
17 10 9 47 3	I	8 0 42 03	41 73	— 0 30	N	64 19 54 49	56 20	+ 1 71
18 10 57 59 8	I	8 52 57 02	56 46	— 0 56	N	67 14 28 48	35 46	+ 6 98
19 11 43 57 3	I	9 42 57 11	56 54	— 0 57	N	71 11 36 43	40 06	+ 3 63
21 13 12 9 6	II	11 17 12 90	12 86	— 0 04	S	81 24 15 60	18 36	+ 2 76
Ma 16 8 3 57 0	I	7 40 57 83	58 32	+ 0 49	N	63 23 19 66	21 41	+ 1 75
17 8 52 53 3	I	8 33 57 39	57 62	+ 0 23	N	65 53 11 78	57 64	+ 5 86
18 9 39 37 2	I	9 24 43 98	43 82	— 0 16	N	69 31 5 20	9 04	+ 3 84
19 10 24 12 7	I	10 13 22 10	21 83	— 0 27	N	74 3 40 43	46 05	+ 5 62
20 11 7 8 8	I	11 0 20 55	20 11	— 0 44	N	79 19 50 34	56 24	+ 5 90
21 11 50 11 2	I II	11 46 25 71	20 60	— 0 11	N	85 7 29 61	36 37	+ 6 76
27 16 40 26 1	II	16 59 56 80	57 39	+ 0 59	S	116 27 36 17	43 58	+ 7 41
28 17 41 12 7	II	18 4 47 48	48 02	+ 0 54	N	117 57 55 58	2 56	+ 6 98
Ap 16 9 1 55 9	I	10 41 15 14	14 86	— 0 28	N	77 1 52 24	1 26	+ 9 02
18 10 26 3 7	I	12 13 29 11	29 10	— 0 01	N	88 39 43 52	52 21	+ 8 69
19 11 8 56 4	I	13 0 25 89	20 87	— 0 02	N	94 53 27 48	37 02	+ 9 54
20 11 54 58 4	I II	13 49 30 37	30 48	+ 0 11	N	101 3 52 02	1 34	+ 9 32
My 15 8 19 29 3	I	11 53 0 02	0 22	+ 0 20	N	85 58 54 79	2 26	+ 7 47
16 9 1 25 6	I	12 39 1 46	1 29	— 0 17	N	92 5 39 23	43 42	+ 4 19
17 9 45 9 5	I	13 26 49 63	49 65	+ 0 02	N	98 17 56 05	1 74	+ 5 69
23 15 31 19 2	II	19 35 20 52	20 40	— 0 12	N	116 50 32 03	26 23	— 5 80
24 16 32 30 4	II	20 40 39 71	40 29	+ 0 58	N	113 42 24 24	19 23	— 5 01
Je 12 6 54 46 7	I	12 18 27 25	27 57	+ 0 32	N	89 31 9 34	21 57	+ 12 23
13 7 36 42 6	I	13 4 28 07	28 03	— 0 04	N	95 35 15 02	22 20	+ 7 18
14 8 21 9 4	I	13 53 0 74	0 57	— 0 17	N	101 36 46 42	52 96	+ 6 54
15 9 9 32 9	I	14 45 31 34	30 98	— 0 36	N	107 17 52 01	2 59	+ 10 58
21 15 20 43 3	II	21 19 5 85	5 88	+ 0 03	S	110 46 32 50	23 44	— 9 06
23 17 6 46 5	II	23 13 23 90	24 03	+ 0 13	N	98 49 18 79	9 70	— 9 09
24 17 54 15 7	II	0 4 58 50	58 70	+ 0 20				
July 11 6 13 37 6	I	13 31 33 52	33 63	+ 0 11	N	99 16 22 74	33 69	+ 10 95
13 7 48 37 9	I	15 14 48 14	48 21	+ 0 07	N	110 10 30 04	38 86	+ 8 82
14 8 44 2 5	I	16 14 21 48	21 43	— 0 05	N	114 24 43 49	51 03	+ 7 54
15 9 45 15 4	I	17 19 44 06	44 41	+ 0 35	N	117 10 41 99	46 83	+ 4 84
16 10 50 48 2	I	18 29 25 21	25 54	+ 0 33	S	117 58 23 93	26 61	+ 2 68
Ag 8 4 53 31 4	I	14 1 38 78	39 01	+ 0 23	N	103 8 5 61	8 18	+ 2 57
9 5 40 3 3	I	14 52 16 95	17 32	+ 0 37	N	108 25 26 41	31 57	+ 5 16
10 6 31 21 7	I	15 47 43 47	44 16	+ 0 69	N	112 57 37 09	40 80	+ 3 71
11 7 28 12 2	I	16 48 42 95	43 44	+ 0 49	N	116 18 52 26	56 40	+ 4 14
12 8 30 10 4	I	17 54 50 04	50 48	+ 0 44	S	118 0 40 98	39 19	— 1 79
13 9 35 15 1	I	19 4 2 60	3 30	+ 0 70	S	117 39 5 86	2 66	— 3 20
20 16 2 55 2	II	1 58 2 48	2 64	+ 0 16	N	77 10 54 59	59 54	+ 4 95
21 16 51 39 0	II	2 50 50 84	51 02	+ 0 18	N	71 36 55 20	55 65	+ 0 45
22 17 41 43 2	II	3 44 59 30	59 20	— 0 10	N	67 8 18 39	11 98	— 6 41
Sept 9 7 19 5 6	I	18 33 56 93	57 36	+ 0 43	S	118 14 40 99	33 20	— 7 79
12 10 22 39 3	I	21 49 46 48	46 92	+ 0 44	S	107 53 29 20	14 82	— 14 38
13 11 17 38 4	I	22 48 49 50	49 97	+ 0 47	S	101 25 49 09	37 25	— 11 84
14 12 11 52 7	II	23 44 54 88	55 34	+ 0 46	N	94 17 36 45	23 43	— 13 02
15 13 1 52 5	II	0 39 0 32	0 77	+ 0 45	N	87 1 47 95	34 60	— 12 35
16 13 51 14 6	II	1 32 26 80	27 24	+ 0 44	N	80 5 54 15	40 06	— 14 09
17 14 41 4 8	II	2 26 21 28	21 53	+ 0 25	N	73 53 37 03	25 44	— 11 59
18 15 32 8 8	II	3 21 29 36	29 66	+ 0 30	N	68 44 20 86	11 68	— 9 18
19 16 24 41 1	II	4 18 6 05	6 21	+ 0 16	N	64 53 4 81	54 64	— 10 17

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE MOONS CENTER (*C* *unred*)

M S i T i m f	I II	A R f m	A R f m	Err f N A	N S	N P D f m	N P D	E f N A
Ob t	Limb	Ol rv	N A		Li b	Ob rv i	from N A	
1837								
S pt 20 17 18 173	II	5 15 47 13	47 27	+ 0 14	N	62 29 38 63	34 72	— 3 91
Oct 9 8 10 17 9	I	21 23 30 59	30 70	+ 0 16	S	110 22 38 26	32 03	— 6 23
10 9 4 50 6	I	22 22 6 68	6 73	+ 0 05	S	104 34 12 13	0 81	— 11 32
12 10 46 17 3	I	0 11 41 71	41 83	+ 0 12	S	90 42 42 34	32 64	— 9 70
13 11 35 6 4	I	1 4 54 41	4 91	+ 0 50	S	83 35 21 87	6 77	— 15 10
N 6 6 58 41 0	I	22 2 3 49	3 61	+ 0 12	S	106 40 58 69	50 92	— 7 77
7 7 49 34	I	22 06 59 54	59 88	+ 0 34	S	100 26 36 99	34 10	— 2 80
D 16 15 54 22 6	II	9 34 45 03	44 70	— 0 33	S	0 6 50 42	5 31	+ 1 89
1838								
J 3 6 7 26 4	I	0 59 16 85	17 43	+ 0 08	S	83 54 0 40	3 11	— 7 29
4 6 54 25 1	I	1 00 20 82	20 93	+ 0 11	S	77 33 11 90	1 20	— 10 70
5 7 42 47 3	I	2 42 48 42	48 21	— 0 21	S	71 55 0 09	40 11	— 9 95
6 8 33 19 3	I	3 37 26 50	26 68	+ 0 13	S	67 18 56 35	49 08	— 7 27
7 9 6 11 9	I	4 34 25 50	25 63	+ 0 13	S	63 58 25 90	17 70	— 8 20
8 10 20 4 8	I	5 33 5 22	5 09	— 0 13	N	62 6 42 21	37 81	— 4 40
9 11 15 35 2	I	6 31 59 76	60 21	+ 0 45	N	62 49 53 10	51 08	— 2 02
10 12 10 10 2	I II	7 29 32 62	32 29	— 0 33				
Γ b 1 8 16 19 2	I	5 14 46 58	47 1	+ 0 57	S	62 20 25 00	23 24	— 1 6
5 9 10 45 8	I	6 13 17 03	17 12	+ 0 09	N	61 36 49 07	49 87	+ 0 30
6 10 4 12 3	I	7 10 49 08	48 21	— 0 87	N	61 25 42 62	41 41	— 1 21
7 10 55 21 4	I	8 6 0 91	0 36	— 0 00	N	64 38 54 67	55 20	+ 0 53
8 11 43 25 2	I	8 58 7 07	6 68	— 0 39	N	68 3 17 76	20 28	+ 2 2
9 12 30 24 7	II	9 47 5 44	4 97	— 0 47	N	72 23 58 50	4 19	+ 5 64
Ma 4 7 6 11	I	5 54 39 78	40 15	+ 0 37	N	61 29 0 20	49 26	— 0 94
5 8 0 11 9	I	6 51 50 30	55 90	+ 0 60	N	61 01 30 53	34 79	+ 1 26
6 8 52 7 0	I	7 48 53 73	51 32	+ 0 09	N	63 40 56 12	2 30	+ 6 18
8 10 26 34 1	I	9 31 20 64	20 16	— 0 48	N	70 50 3 24	9 60	+ 6 41
9 11 9 18 3	I	10 18 11 53	11 12	— 0 41	N	70 40 23 35	31 01	+ 7 66
10 11 49 52 8	I	11 2 48 08	47 65	— 0 43	N	81 3 0 10	5 69	+ 5 59
11 12 31 12 2	II	11 46 12 07	11 41	— 0 66	N	86 46 0 69	9 12	+ 8 43
Ap l 2 6 46 43 0	I	7 29 37 09	37 93	+ 0 84	N	62 48 09 85	2 80	+ 2 9
3 7 37 9 6	I	8 24 6 69	7 43	+ 0 74	N	65 31 5 75	10 53	+ 4 78
4 8 23 59 8	I	9 14 58 79	09 98	+ 1 19	N	69 18 1 29	23 37	+ 8 08
5 9 7 37 5	I	10 2 38 30	38 46	+ 0 16	N	73 55 9 40	22 50	+ 13 10
6 9 48 45 4	I	10 47 48 43	48 36	— 0 07	N	79 8 24 04	34 09	+ 10 05
7 10 28 21 3	I	11 31 26 32	26 15	— 0 17	N	84 45 53 25	2 53	+ 9 28
8 11 7 25 0	I	12 11 32 91	32 63	— 0 28	N	90 36 37 02	40 93	+ 8 91
9 11 46 59 4	I	12 58 10 97	10 66	— 0 31	N	96 29 24 10	34 36	+ 10 24
May 2 7 3 54 0	I	9 45 2 36	2 96	+ 0 60	N	72 10 2 0	9 96	+ 7 46
3 7 46 10	I	10 31 10 81	11 63	+ 0 82	N	77 11 57 87	7 03	+ 9 16
5 9 5 12 1	I	11 58 26 63	26 49	— 0 14	N	88 7 32 09	41 00	+ 8 91
6 9 44 29 4	I	12 41 47 64	47 47	— 0 17	N	94 20 18 00	22 37	+ 4 37
7 10 25 5 8	I	13 26 28 70	28 32	— 0 38	N	100 8 26 83	30 37	+ 3 54
9 11 55 47 8	I II	15 4 18 11	17 49	— 0 62	S	110 34 58 83	7 27	— 1 56
J 2 7 40 36 3	I	12 24 1 11	1 48	+ 0 37	N	92 6 24 30	31 42	+ 7 12
3 8 20 24 9	I	13 7 53 46	53 55	+ 0 09	N	97 55 8 98	14 74	+ 5 76
J ly 1 6 56 2 9	I	13 33 42 03	41 93	— 0 10	N	101 23 36 01	34 3	— 1 66
31 7 6 0 1	I	15 42 3 29	3 73	+ 0 44	N	113 51 46 14	48 72	+ 2 58
A g 1 7 59 36 4	I	16 39 47 09	48 14	+ 0 00	N	116 53 59 74	3 35	+ 3 61

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE MOON'S CENTER (*Continued*)

M an S I	Tim f	I II	A R from	A R f m	E f N A	N S	N P D f m	N P D	E f N A
Obs ti		Limb	Obs rv t	N A		Limb	Obs rv ti	f m N A	
1838								/	
A g	2 8 57 48 1	I	17 42 7 92	8 44	+ 0 52	N	118 25 53 9	3 42	— 0 3
	3 9 59 2 8	I	18 47 30 36	30 83	+ 0 47	S	118 6 53 89	54 72	+ 0 8
S pt	3 11 35 18 5	I	22 26 10 36	10 81	+ 0 45	S	102 40 49 30	46 30	— 3 00
	4 12 30 20 3	II	23 23 2 53	2 80	+ 0 27	N	95 27 27 40	19 40	— 8 00
	27 6 28 29 9	I	18 53 11 20	11 86	+ 0 66	S	118 10 32 62	25 48	— 7 14
	28 7 26 49 2	I	19 55 36 53	37 19	+ 0 66	S	115 49 31 92	23 79	— 8 13
	29 8 23 54 4	I	20 56 47 18	47 64	+ 0 46	S	111 44 3 50	58 37	— 5 13
	30 9 18 54 3	I	21 55 50 86	50 88	+ 0 02	S	106 8 31 89	25 49	— 6 40
Oct	1 10 11 50 1	I	22 52 50 90	50 78	— 0 12	S	99 21 43 55	45 20	+ 1 6
N v	1 11 24 24 4	I	2 7 51 95	51 87	— 0 08	N	74 10 40 20	34 88	— 5 32
	24 5 54 2 0	I	22 7 12 91	13 7	+ 0 36	S	104 36 23 60	20 33	— 3 27
	25 6 42 56 3	I	23 0 10 42	10 94	+ 0 52	S	98 12 16 59	21 77	+ 18
	27 8 19 33 7	I	0 44 57 57	57 83	+ 0 26	S	81 9 2 22	47 12	— 10
Dec	1 12 4 53 0	II	4 44 22 05	22 41	+ 0 36	N	62 51 18 61	13 6	— 4 96
	24 6 15 32 6	I	0 27 2 36	2 58	+ 0 22	S	86 16 15 54	15 94	+ 0 40
	25 7 3 48 1	I	1 19 23 59	23 96	+ 0 37	S	77 29 21 00	16 81	— 4 19
	26 7 54 31 4	I	2 14 13 61	14 13	+ 0 52	S	73 14 26 03	22 32	— 3 71
	28 9 46 43 3	I	4 14 41 00	41 35	+ 0 35	N	64 2 23 84	18 45	— 5 39
	29 10 47 25 1	I	5 19 30 35	30 68	+ 0 33	N	61 53 24 46	23 26	— 1 20
1839									
Jan	23 6 43 34 2	I	2 53 29 17	30 01	+ 0 84	S	69 16 11 05	3 31	— 7 74
	26 9 37 22 5	I	5 59 39 59	39 85	+ 0 26	N	61 26 13 52	12 56	— 0 36
F b	21 6 32 28 3	I	4 36 44 83	45 95	+ 1 12	S	62 45 46 75	42 83	— 3 92
	22 7 31 40 9	I	5 40 3 40	4 37	+ 0 97	N	61 21 53 43	50 02	— 3 41
	23 8 30 10 8	I	6 42 39 11	39 83	+ 0 72	N	61 47 51 08	54 38	+ 3 30
	24 9 9 19	I	7 42 34 00	34 53	+ 0 53	N	63 54 49 61	56 63	+ 7 02
	25 10 18 10	I	8 38 35 73	35 99	+ 0 26	N	67 25 34 01	40 65	6 64
	26 11 5 53 1	I	9 30 29 87	29 86	— 0 01	N	71 59 27 07	33 28	+ 6 21
	27 11 51 9 9	II	10 18 47 24	47 52	+ 0 28	N	77 16 48 97	57 0	+ 8 08
	28 1 33 39 2	II	11 4 20 24	19 90	— 0 34	N	83 0 4 63	14 38	+ 9 70
Mar	22 6 24 51 6	I	6 23 27 13	27 89	+ 0 76	N	61 2 54 94	57 34	+ 2 40
	23 7 22 4 3	I	7 24 43 55	44 40	+ 0 85	N	63 4 24 72	29 87	+ 5 15
	24 8 15 11 0	I	8 21 52 85	53 98	+ 1 13	N	66 11 41 33	48 91	+ 7 58
	25 9 3 54 2	I	9 14 38 47	38 88	+ 0 41	N	70 26 37 40	47 10	+ 9 70
	26 9 48 43 2	I	10 3 28 96	29 25	+ 0 29	N	75 29 15 38	26 42	+ 11 04
	27 10 30 32 5	I	10 49 20 01	20 01	0 00	N	81 2 32 21	39 83	+ 7 62
	28 11 10 25 9	I	11 33 15 29	15 16	— 0 13	N	86 51 56 89	6 70	+ 9 81
	29 11 49 27 1	I	12 16 19 45	19 33	— 0 12	N	92 45 12 77	19 16	+ 6 39
	30 12 30 41 9	II	12 59 39 15	38 68	— 0 47	S	98 31 11 36	15 89	+ 4 53
April	25 9 49 20 4	I	12 2 20 17	20 00	— 0 17	N	90 52 56 16	6 02	+ 9 86
	26 10 28 15 9	I	12 45 18 64	18 60	— 0 14	N	96 39 45 32	53 52	+ 8 20
	27 11 8 8 0	I	13 29 14 89	14 53	— 0 36	N	102 11 53 11	58 00	+ 4 89
	28 11 50 58 9	III	14 15 8 09	7 91	— 0 18	S	107 17 45 21	45 99	+ 0 78
May	21 7 8 51 7	I	11 3 56 40	56 98	+ 0 58	N	83 12 56 00	45 51	— 10 49
June	21 7 44 44 1	I	13 42 7 44	7 58	+ 0 14	N	103 59 56 40	4 38	+ 7 98
Sept	23 12 15 22 2	II	0 22 0 56	0 44	— 0 12	N	85 34 4 44	57 10	— 7 34
Oct.	16 6 40 49 0	I	20 19 26 39	26 69	+ 0 30	S	113 16 47 14	38 37	— 8 77
	17 7 31 26 3	I	21 14 7 70	8 12	+ 0 42	S	108 45 41 50	31 65	— 9 85

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE MOON'S CENTER (*Continued*)

M an S l T i m e	I II	A R f r o m	A R f r o m	E r r	N S	N P D f r o m	N P D	E
Ob s r v t i	L u n a	Ob s r v t i	N A	f N A	L i m b	Ob s r v t i	f r o m N A.	f N A
1839								
O t 18 8 20 42.9	I	22 7 28 05	28 27	+ 0.22	S	103 6 10 34	4 06	— 6 28
1840								
J 14 7 45 36.1	I	3 19 17 33	18 12	+ 0.79	S	66 29 6 17	3 04	— 3 13
15 8 46 45.8	I	4 24 37 02	37 86	+ 0.84	S	63 8 11 00	12 83	+ 1 83
16 9 51 20.0	I	5 33 19 62	19 94	+ 0.32	N	61 44 49 03	52 34	+ 3 31
18 11 58 20.1	I	7 48 30 82	31 26	+ 0.44	N	65 19 39 74	43 46	+ 3 72
F b 12 7 39 45.9	I	5 7 49 61	50 50	+ 0.89	S	61 54 21 06	23 77	+ 2 71
13 8 42 49.0	I	6 14 59 44	0 33	+ 0.89	N	61 52 34 39	36 40	+ 2 01
14 9 44 23.0	I	7 20 38 99	39 87	+ 0.88	N	63 50 45 46	50 39	+ 4 93
15 10 42 14.3	I	8 22 33 86	34 45	+ 0.59	N	67 32 41 58	41 90	+ 0 37
16 11 35 26.8	I	9 19 48 49	48 75	+ 0.6	N	72 32 9 96	16 73	+ 6 77
17 12 26 26.8	II	10 12 43 17	43 33	+ 0.16	N	78 22 12 04	19 40	+ 7 36
Ma 13 8 35 17.7	I	8 1 43 07	44 39	+ 1.32	N	66 6 7 10	14 40	+ 7 30
15 10 17 55.9	I	9 52 26 38	26 66	+ 0.28	N	76 0 38 15	44 69	+ 6 54
16 11 3 37.3	I	10 42 10 18	10 14	— 0.04	N	82 1 6 44	9 15	+ 2 71
17 11 46 57.1	I	11 29 32 26	32 13	— 0.13	N	88 15 46 64	50 98	+ 4 34
April 10 7 25 38.2	I	8 42 13 65	14 40	+ 0.75	N	69 13 11 35	14 84	+ 3 49
11 8 10 31.3	I	9 36 9 03	9 1	+ 0.48	N	74 20 5 68	11 94	+ 6 26
13 9 44 46.7	I	11 13 28 47	28 35	— 0.12	N	86 10 12 33	17 39	+ 5 06
15 11 8 15	I	12 44 49 45	49 40	— 0.00	N	98 14 26 44	25 72	— 0 72
M y 15 11 16 34.3	I	14 51 43 47	42 98	— 0.49	S	111 29 24 64	19 81	— 4 83
J 8 7 6 28.8	I	12 15 31 04	31 35	+ 0.31	N	94 50 16 36	19 91	+ 3 55
Oct 6 8 10 48.6	I	21 13 10 85	10 13	— 0.72	S	107 7 06 34	51 72	— 4 62
7 8 56 12.5	I	22 2 38 02	37 71	— 0.31	S	101 48 16 82	14 41	— 2 41
9 10 26 16.4	I	23 40 50 86	50 48	— 0.38	S	89 19 35 4	31 57	— 3 97
Dec 3 6 51 14.6	I	23 42 3 53	4 00	+ 0.47	S	88 43 44 34	40 09	— 4 25
5 8 24 46.8	I	1 23 47 37	48 18	+ 0.81	S	76 17 23 50	17 25	— 6 25
6 9 18 7.4	I	2 21 16 12	17 12	+ 1.00	S	70 40 18 79	13 01	— 5 28
1841								
Jan 2 7 4 9.8	I	1 03 22 10	23 21	+ 1.11	S	73 1 56 58	50 78	— 0 80
3 7 58 23.2	I	2 51 43 65	44 88	+ 1.23	S	68 6 3 36	3 99	+ 0 63
5 10 3 38.6	I	6 5 18 44	19 02	+ 0.58	N	62 34 46 92	60 94	+ 4 02
Feb 1 7 45 13.5	I	4 32 55 42	56 19	+ 0.77	S	63 6 8 48	11 88	+ 3 40
2 8 49 30.1	I	5 41 20 46	21 51	+ 1.05	N	62 25 6 29	5 72	— 0 57
3 9 54 42.2	I	6 50 39 00	39 34	+ 0.34	N	63 52 2 30	4 69	+ 2 39
4 10 57 42.2	I	7 57 44 39	44 96	+ 0.57	N	67 20 47 30	52 38	+ 5 08
27 4 39 19.5	I	3 8 57 96	57 33	— 0.63	S	66 52 28 14	36 62	+ 8 48
28 5 36 58.1	I	4 10 44 05	43 94	— 0.11	S	63 49 13 58	10 40	— 3 18
Mar 3 8 42 43.8	I	7 28 49 87	50 56	+ 0.69	N	65 37 40 21	44 80	+ 4 59
4 9 41 28.6	I	8 31 38 91	39 47	+ 0.56	N	69 54 15 28	21 14	+ 5 86
5 10 36 23.4	I	9 30 37 09	37 66	+ 0.57	N	75 28 35 53	42 00	+ 6 47
April 2 9 19 27.1	I	10 3 49 97	51 01	+ 1.04	N	79 17 10 87	19 28	+ 8 41
3 10 7 50.0	I	10 56 15 93	16 37	+ 0.44	N	85 42 58 04	5 87	+ 7 83
4 10 54 40.6	I	11 47 10 13	10 38	+ 0.25	N	92 16 43 08	48 81	+ 0 73
M y 26 5 12 02.6	I	9 29 29 51	30 45	+ 0.94	N	75 59 6 47	11 02	+ 4 55
Ju e 16 21 51 17.0	II	3 31 7 49	7 19	— 0.30				

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE MOON'S CENTER (Contd)

M S i Tim f	I II	A R f m	A R f m	Err f N A	N S	N P D f m	N I D	L f N A
Ob	L mb	Ob rv t	N A		L mb	Ob rv t	f m N A	
1841								
J ly 14 20 31 21 8	II	4 4 22 86	22 77	- 0 09				
A g 24 6 12 32 1	I	16 24 9 10	9 68	+ 0 58				
S pt 20 4 3 18 9	I	16 1 2 33	3 43	+ 1 10	N	11 23 0 90	4 59	+ 3 69
21 4 56 24 0	I	16 58 12 46	13 40	+ 0 94	N	116 45 14 48	11 46	- 0 02
4 7 27 59 1	I	19 41 57 90	57 83	- 0 07	S	112 41 13 71	11 02	- 2 6 J
N v 5 17 55 48 3	II	8 51 55 79	56 41	+ 0 67				
17 3 12 2 8	I	18 58 16 55	17 28	+ 0 73				
18 4 0 27 4	I	19 50 43 76	43 89	+ 0 13				
1842								
J 4 18 42 8 5	II	13 37 59 03	0 04	+ 1 01				
22 8 4 56 5	I	4 12 16 17	17 48	+ 1 31	S	64 28 41 21	3 7	- 3 61
6 12 13 35 0	I	8 37 20 88	22 34	+ 1 46	S	72 8 2 22	5 91	+ 3 69
F b 21 8 2 24 7	I	6 58 10 00	10 93	+ 0 93	N	65 44 13 9	14 41	+ 0 4 C
M 2 17 4 22 7	II	15 44 37 43	37 9	+ 0 16	S	114 24 16 33	13 41	- 3 12
30 15 47 8 2	II	16 17 33 43	33 40	- 0 03	S	115 17 50 5	1 73	+ 1 18
Apr 1 3 18 26 52 3	II	10 9 37 13	37 05	- 0 08				
M y 17 6 10 42 2	I	9 51 1 98	2 54	+ 0 56	N	80 1 0 99	7 33	+ 6 34
18 7 0 18 6	I	10 44 42 14	42 82	+ 0 68	N	86 11 11 23	20 11	+ 5 18
20 8 38 17 1	I	12 30 50 11	50 8 J	+ 0 74	N	98 46 7 76	31 93	+ 4 17
22 10 21 36 5	I	14 22 21 72	22 32	+ 0 60	N	109 19 20 88	14 44	- 1 44
23 11 16 31 4	I	15 21 23 62	24 07	+ 0 45	S	112 57 37 60	3 8	- 2 02
24 12 15 18 J	II	16 21 59 08	59 62	+ 0 54	S	11 J 8 52 87	53 27	+ 0 40
2 13 11 43 8	II	17 22 30 39	30 56	+ 0 17	S	11 J 4 J 39 4 J	39 06	- 0 39
26 14 6 27 9	II	18 21 21 9	22 07	+ 0 48				
27 14 58 15 9	II	19 17 17 13	17 30	+ 0 17				
29 16 31 39 3	II	20 58 52 34	52 34	0 00				
J 19 9 8 44 7	I	14 59 41 8	42 21	+ 0 63	N	111 5 62	59 13	- 8 19
20 10 3 38 2	I	15 58 41 21	41 46	+ 0 25	N	114 31 6 49	1 29	- 2 20
21 10 59 21 3	I	16 58 30 64	31 04	+ 0 40	N	11 J 42 42 9	39 01	- 3 91
26 15 9 27 6	II	21 26 51 46	51 21	- 0 25				
J ly 19 9 48 14 4	I	17 37 34 5	34 59	+ 0 04	S	115 40 25 61	19 81	- 80
20 10 41 20 6	I	18 34 4 J 09	4 J 14	+ 0 0 J	S	114 24 22 33	16 18	- 6 0
22 12 20 26 9	II	20 20 54 49	54 6	+ 0 07	N	108 21 14 98	10 99	- 3 9 J
26 15 8 19 1	II	23 24 1 17	1 68	+ 0 51				
27 15 48 22 2	II	0 8 6 57	6 79	+ 0 22				
28 16 29 43 9	II	0 33 31 40	31 22	- 0 18				
A g 1 7 44 14 3	I	17 19 41 12	41 37	+ 0 2	N	11 J 43 38 71	34 13	- 4 8
16 8 37 35 2	I	18 17 6 42	6 46	+ 0 04	N	114 54 1 87	0 33	- 1 54
1 12 27 32 0	II	22 25 18 12	18 01	- 0 11	N	9 5 90 J	7 60	1 4
24 14 28 7 2	II	0 38 1 97	2 27	+ 0 30				
28 17 36 20 9	II	4 2 32 57	32 69	+ 0 12				
Sept 12 6 33 5 5	I	17 8 43 22	43 69	+ 0 47	N	115 8 42 66	4 7	+ 2 91
13 7 2 J 10 0	I	18 54 51 91	52 02	+ 0 11	S	113 25 59 78	8 48	- 1 30
14 8 14 10 7	I	19 47 54 76	55 07	+ 0 31	S	110 35 13 63	11 2	- 2 11
15 9 0 7 2	I	20 37 54 04	53 90	- 0 14	S	106 0 43 87	3 08	- 8 79
16 9 43 26 2	I	21 25 15 27	15 09	- 0 18	S	102 26 17 47	17 5	+ 0 08
17 10 24 48 9	I	22 10 40 40	40 12	- 0 28	S	97 34 12 99	14 29	+ 1 30
19 11 46 2 9	II	23 39 1 45	1 31	- 0 14				

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE MOON'S CENTER (*Cent d*)

M	S	Time	f	I II	A R f	A R f m	E r o f N A	N S	N P D f m	N P D	E f N A
Ob	ti			L mb	Ob	l	N A	L b	Ob rv i	f m N A	
184											
O t	11	C	J 21 1	I	19 29	13 42	13 87	S	111 28	9 80	— 274
	12	6 56	47 6	I	20 20	42 00	42 31	S	108 0	12 53	— 028
	13	7 41	8 1	I	21 9	4 3	4 6	S	103 48	48 90	+ 054
	14	8 23	7 3	I	21 5	6 22	6 58	S	99 6	53 85	+ 170
	15	9	40 6	I	22 39	41 92	42 00	S	94 5	37 88	— 174
	16	9 43	43 9	I	23 23	47 83	47 07	S	88 54	59 12	+ 161
	17	10 24	9 8	I	0 8	1 15	17 99	S	83 45	6 59	+ 0 3
	18	11 5	57	I	0 51	8 13	8 39	N	78 46	53 72	+ 0 69
	19	11 0	54 6	I II	1 42	10 11	11 37	N	74 12	35 11	— 4 00
N	11	7 0	29 3	I	22 22	37 62	37 80	S	90 48	38 71	+ 0 98
	12	7 40	37 7	I	23 6	48 98	19 56	S	90 42	0 46	+ 8 83
	13	8 20	48 2	I	23 1	3 01	3 0	S	80 33	18 19	+ 2 17
	15	J 4	10 4	I	1 23	3 67	3 81	S	75 18	56 10	+ 3 39
	17	11 20	0 9	I	3 7	7 4	8 03	N	68 15	0 38	— 2 34
	18	12 10	29 8	II	4 3	58 9	0 05	N	65 6	39 00	+ 1 88
D c	12	7 38	38 1	I	1 3	7 51	7 82	S	77 38	20 30	+ 97
	13	8 23	6 4	I	1 51	41 32	41 31	S	73 14	57 51	+ 6 12
	14	J 10	52 0	I	2 43	31 42	34 99	S	69 31	30 31	+ 9 16
	16	10 57	17 8	I	4 38	13 68	14 50	N	65 12	18 08	+ 2 83
	17	11 54	31 6	I	5 39	37 27	38 35	N	6	J 11 70	+ 1 10
	18	12 54	53 1	II	6 41	13 38	41 10				
	19	13 51	8 0	II	7 42	35 96	36 43				
	1	15 38	14 8	II	9 57	25 4	25 89				
	22	16 28	23 0	II	10 31	39 39	40 11				
	23	17 17	32 8	II	11 24	54 03	54 6				
1843											
J	9	C 1	3 8	I	1 30	3 50	3 93	S	7 4	17 49	— 91
	11	7 19	52 4	I	3 12	4 17	4 22	S	67 3	4 71	+ 4 29
	21	10 51	35 2	II	12 56	11 67	12 48				
	22	17 16	53 0	II	13 52	33 00	34 00				
F b	8	C 30	27 0	I	3 43	31 3	31 71	S	66 40	35 18	+ 0 11
	9	7 23	31 6	I	4 40	46 02	46 70	S	65 1	39 78	+ 3 56
	10	8 19	20 2	I	5 40	43 31	44 14	S	65 14	40 87	+ 3 01
	11	9 16	16 1	I	6 42	10 82	11 38	N	66 46	6 34	+ 3 2
	12	10 1	11 5	I	7 41	41 6	41 92	N	69 53	21 87	+ 3 11
	13	11 10	32 9	I	8 44	7 1	8 29	N	74 24	1 12	+ 7 11
	14	12 6	29 6	I II	9 43	1 87	2 8	S	80 3	2 71	+ 1 92
	15	13 1	3 3	II	10 40	53 07	54 48				
	16	13 53	43 1	II	11 37	19 60	20 49				
	17	14 46	33 0	II	12 34	11 93	15 38				
	18	15 40	20 1	II	13 32	5 87	6 40				
	19	16 35	30 1	II	14 31	20 47	20 57				
	20	17 31	54 8	II	15 31	50 90	51 23				
	21	18 28	50 6	II	16 32	52 66	53 08	S	114 32	38 46	— 4 61
M	11	7 58	4 5	I	7 13	38 5	38 36	N	67 21	39 71	+ 6 1
	12	8 53	22 5	I	8 13	1 79	1 99	N	72 3	37 15	+ 97
	14	10 41	33 8	I	10 9	21 76	22 38	N	82 55	4 17	+ 6 61
	15	11 34	55 1	I	11 6	48 91	48 76	N	89 23	15 52	+ 7 12
	16	12 31	0 6	II	12 4	46 20	46 40				
	17	13 25	59 8	II	13 3	50 36	50 76				
	19	10 20	57 2	II	15 6	57 59	57 77				
Apr 1	8	6 42	23 7	I	7 48	7 17	7 87	N	70 36	3 46	+ 4 72
	J	7 35	10 1	I	8 44	58 78	59 13	N	74 50	58 40	+ 9 34
	10	8 27	14 4	I	9 41	7 68	8 30	N	80 7	22 77	+ 8 77

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE MOON'S CENTER (C i l)

M S ar TIm f	I II	A R f m	A R from	E f N A	N S	N P D f m	N I D	E f N A
Ob ti	Limb	Ob	N A		Limb	Ob ti	f m N A	
1843								
Ap r 11 9 19 54	I	10 37 374	4 64	+ 0 90	N	86 8 13 32	19 1	+ 5 53
12 10 11 32 3	I	11 33 35 79	36 34	+ 0 55	N	92 31 39 83	46 11	+ 6 58
13 11 5 28 1	I	12 31 37 81	38 23	+ 0 42	N	98 51 34 12	40 16	+ 6 04
14 12 2 50 6	I II	13 31 57 80	58 36	+ 0 56	S	104 38 46 08	46 12	+ 0 04
1 13 2 43 5	II	14 34 48 10	48 51	+ 0 11				
16 14 3 18 5	II	15 39 28 18	28 78	+ 0 60				
17 15 4 13 8	II	16 44 30 63	31 12	+ 0 49				
M y 8 7 10 17	I	10 14 4 21	4 75	+ 0 54	N	83 48 55 74	4 34	+ 8 60
9 8 0 10 8	I	11 8 18 09	18 37	+ 0 28	N	89 50 36 90	42 12	+ 5 22
11 9 45 18	I	13 1 21 87	22 32	+ 0 15	N	101 54 57 19	1 66	+ 4 17
12 10 41 29 4	I	14 1 57 03	57 71	+ 0 68	N	107 6 7 90	5 63	+ 1 13
13 11 42 9 5	I II	15 5 31 26	35 23	+ 0 97				
14 12 44 50 3	II	16 11 11 10	11 92	+ 0 82				
15 13 46 18 9	II	17 16 46 19	46 93	+ 0 74				
J 6 6 55 14	I	11 43 18 78	19 37	+ 0 59				
7 7 3 51 2	I	12 38 15 36	16 07	+ 0 71	N	99 4 3 07	4 07	+ 1 00
8 8 29 13 3	I	13 35 44 36	44 89	+ 0 53	N	105 5 21 85	23 67	+ 1 8
9 9 25 40 7	I	14 36 19 40	20 19	+ 0 72	N	109 30 36 97	35 71	+ 1 26
10 10 25 0 9	I	15 38 47 08	47 69	+ 0 61	N	112 36 50 21	44 86	+ 5 3
15 15 10 24 1	II	20 23 25 74	25 76	+ 0 02				
16 15 56 8 8	II	21 33 33 83	33 38	- 0 45				
A 8 10 50 48 9	I	19 58 10 75	11 06	+ 0 31	S	108 21 24 60	18 36	- 6 24
S pt 4 8 46 45 0	I	19 39 13 23	13 74	+ 0 51	S	109 23 20 16	9 4	- 10 71
8 11 48 14 6	I	22 57 53 67	54 83	+ 1 16	N	91 21 45 29	44 95	- 0 34
13 15 24 48 5	II	2 52 43 93	43 91	- 0 02				
14 16 12 35 8	II	3 44 34 26	34 26	0 00				
O t 2 7 33 44 9	I	20 17 24 21	24 23	+ 0 02	S	106 40 19 89	17 33	- 2 6
3 8 20 35 1	I	21 8 16 40	16 75	+ 0 35	S	102 29 32 64	32 1	- 0 19
4 9 4 44 5	I	21 55 27 78	28 28	+ 0 50	S	97 50 23 71	25 75	+ 2 01
5 0 47 4 0	I	22 42 49 87	50 31	+ 0 44	S	92 56 15 19	15 81	+ 0 62
6 10 28 26 8	I	23 28 15 43	15 87	+ 0 44	S	87 58 41 99	42 9	+ 0 60
7 11 9 42 4	I	0 13 34 90	35 39	+ 0 49	N	83 8 33 91	32 0	- 1 41
12 14 57 49 1	II	4 19 58 29	58 38	+ 0 09				
13 15 48 10 7	II	5 14 24 30	24 06	- 0 24				
14 16 39 22 5	II	6 9 40 18	40 36	+ 0 18				
31 7 3 5 6	I	21 40 56 62	56 75	+ 0 13	S	99 10 34 35	28 80	- 5
N v 2 8 27 34 5	I	23 13 30 62	30 98	+ 0 36	S	89 25 35 8	55 92	+ 2 31
3 9 8 40 1	I	23 58 40 00	40 33	+ 0 33	S	84 35 29 86	35 7	+ 5 71
4 9 50 12 6	I	0 44 16 12	16 65	+ 0 53	S	79 59 31 77	35 21	+ 3 44
5 10 32 56 0	I	1 31 4 04	4 74	+ 0 70	N	75 47 49 64	52 51	+ 2 87
6 11 17 25 1	I	2 19 37 67	38 42	+ 0 7	N	72 10 53 33	3 00	+ 9 67
7 12 6 7 3	II	3 10 19 35	20 02	+ 0 67	N	69 19 48 5	57 00	+ 8 47
8 12 54 40 6	II	4 2 56 80	57 47	+ 0 67				
11 15 26 41 9	II	6 47 11 07	11 32	+ 0 25				
13 17 6 24 4	II	8 35 3 89	4 13	+ 0 24				
14 17 55 4 8	II	9 27 49 79	50 18	+ 0 39				
29 6 25 7 3	I	22 57 10 98	11 45	+ 0 47	S	91 2 8 29	1 3	+ 3 04
30 7 6 35 9	I	23 42 42 56	43 25	+ 0 69	S	86 8 50 69	53 85	+ 3 16
D c 5 10 48 3					N	87 7 42 43	45 35	+ 2 92
9 14 14 13 6	II	7 24 54 52	5 06	+ 0 54				
13 17 28 7 1	II	10 55 7 37	7 96	+ 0 59				
29 6 26 4 8	I	0 56 26 28	26 90	+ 0 67	S	78 44 31 12	3 99	+ 1 87

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE MOON'S CENTER (Continued)

M S l T m f	I II	A R f m	A R m	E f N A	N S	N l D f m	N P D	Err f N A
Ob r v l	Limb	Ob l	N A		Limb	Ob l	N A	
1843								
D 30 7 9 168	I	1 43 4 32	42 94	+ 062	S	74 42 27 6	32 83	+ 527
31 7 54 132	I	2 32 43 91	41 61	+ 067	S	71 18 39 40	43 38	+ 389
1844								
J 2 9 30 392	I	4 17 21 91	22 26	+ 035	S	67 6 1 91	18 56	+ 265
3 10 21 466	I	5 12 31 9	35 35	+ 040	S	66 37 22 77	25 87	+ 310
4 11 13 533	I	6 8 46 97	47 27	+ 030	N	68 21 32 99	33 36	+ 037
5 12 8 159	II	7 3 31	4 20	+ 026	N	69 22 39 66	46 41	+ 675
6 12 59 330	II	8 0 25 48	25 87	+ 030				
7 13 49 328	II	8 54 31 41	31 70	+ 03				
8 14 38 213	II	9 47 25 5	25 98	+ 013				
10 16 14 449	II	11 31 6 77	7 12	+ 03				
11 17 4 30	II	12 26 19 50	20 07	+ 07				
12 17 5 247	II	13 20 14 64	4 43	+ 079				
28 6 33 479	I	3 2 29 80	30 8	+ 078	S	69 49 1 59	4 18	+ 259
29 7 21 498	I	3 51 36 87	36 83	- 001	S	67 46 33 57	36 2	+ 265
Γ b 1 9 5 248	I	6 40 98 2	28 83	+ 031	N	68 21 2 22	6 62	+ 440
3 11 38 510	I	8 32 4 06	4 12	+ 006	S	74 49 44 95	48 34	+ 339
4 12 30 237	II	9 26 37 10	37 49	+ 039	S	70 31 30 10	39 61	+ 054
6 14 10 463	II	11 14 4 86	5 40	+ 054				
7 15 0 53	II	12 8 18 07	18 46	+ 039				
8 15 52 291	II	13 3 55 99	56 52	+ 053				
9 16 46 87	II	14 1 39 34	39 63	+ 029				
27 6 52 377	I	5 19 41 74	42 19	+ 01	S	60 57 47 14	50 72	+ 38
28 7 43 380	I	6 14 47 17	47 37	+ 020	N	67 47 3 4	10 42	+ 497
29 8 34 93	I	7 10 13 68	13 88	+ 020	N	69 49 2 90	30 83	+ 493
M 1 9 26 123	I	8 5 31 31	31 37	+ 006	N	73 0 37 90	41 67	+ 377
2 10 17 08	I	9 0 24 55	24 68	+ 013	N	77 46 6 99	38	- 314
3 11 7 307	I	9 54 58 50	8 82	+ 032	N	82 17 18 1	19 84	+ 169
4 11 58 46	I	10 49 37 82	37 89	+ 007	S	87 51 40 71	34 44	- 630
5 12 51 363	II	11 45 4 44	4 70	+ 026				
6 13 44 194	II	12 41 51 53	51 90	+ 037				
7 14 39 27	II	13 40 39 18	39 82	+ 064				
8 15 35 593	II	14 41 40 92	41 55	+ 063				
9 16 34 467	II	15 44 32 91	33 18	+ 057				
10 17 34 174	II	16 48 10 2	10 85	+ 060				
27 6 24 483	I	6 46 7 12	7 23	+ 011	N	69 3 20 81	31 81	+ 500
28 7 14 473	I	7 40 10 44	10 4	+ 010	N	71 39 14 07	20 41	+ 634
29 8 4 298	I	8 33 57 56	58 00	+ 041	N	7 17 21 44	26 63	+ 519
30 8 54 31	I	9 27 35 98	36 04	+ 006	N	79 49 49 93	55 11	+ 518
31 9 43 535	I	10 21 31 16	31 23	+ 007	N	85 5 8 89	13 11	+ 422
Ap l 1 10 34 397	I	11 16 22 61	22 87	+ 026	N	90 47 28 60	31 51	+ 291
2 11 27 86	I	12 12 57 8	58 00	+ 042	N	96 36 16 54	15 98	- 06
3 12 23 142	II	13 12 2 58	2 68	+ 010	S	102 6 38 64	3 98	- 266
4 13 22 110	II	14 13 56 37	7 18	+ 081				
5 14 22 290	II	15 18 19 52	0 62	+ 110				
6 15 24 84	II	16 24 5 27	6 16	+ 089				
7 16 25 201	II	17 29 24 00	24 59	+ 059				
8 17 24 125	II	18 32 24 90	25 37	+ 038				
26 6 41 254	I	9 4 2 90	3 36	+ 046	N	77 56 1 24	56 1	+ 527
28 8 21 121	I	10 48 58 94	59 25	+ 031	N	88 4 37 05	42 78	+ 573
29 9 11 314	I	11 43 24 09	24 37	+ 028	N	93 42 53 44	56 98	+ 354
30 10 4 229	I	12 40 22 66	23 14	+ 048	N	99 18 50 63	56 26	+ 563
My 1 11 0 346	I	13 40 41 92	42 63	+ 071	N	104 27 14 25	19 04	+ 479
2 12 2 476	II	14 44 42 76	43 71	+ 095	S	108 39 35 47	31 15	- 402
3 13 5 289	II	15 51 29 74	30 88	+ 111				

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE MOON'S CENTER (Continued)

Mean Solar Time Ob	II Limb	Right Ascension Ob	Right Ascension N A	Error f N A	N S Limb	North Polar Distance Ob	North Polar Distance f m N A	Error f N A
1844		m						
May 26 7 1 30.4	I	11 19 27.34	27 96	+ 0.62	N	91 30 20.45	23 20	+ 2.75
28 8 44 57	I	13 10 15.92	16 21	+ 0.29				
29 9 40 42.8	I	14 11 0.99	1 64	+ 0.65	N	106 39 10.61	12 09	+ 2.08
30 10 41 15.9	I	15 15 42.70	43 66	+ 0.96	N	110 10 24.67	24 41	- 0.26
31 11 44 46.3	I	16 23 20.55	21 70	+ 1.15	S	112 10 38.93	32 95	- .78
June 3 14 52 41.0	II	19 41 15.87	16 36	+ 0.49				
4 15 46 49.6	II	20 39 32.14	32 55	+ 0.41				
5 16 36 44.0	II	21 33 33.72	33 66	- 0.06				
6 17 23 17.4	II	22 24 12.82	12 90	+ 0.08				
25 7 28 15.3	I	13 44 37.02	37 74	+ 0.72	N	104 46 11.4	58 91	- 2.23
28 10 28 22.9	I	16 57 8.00	9 00	+ 1.00	N	112 30 56.19	49 77	- 6.42
July 2 14 25 33.5	II	21 8 26.99	27 44	+ 0.45				
24 7 14 24.8	I	15 25 6.32	7 30	+ 0.98	N	110 25 12.1	1 02	- 0.11
27 10 16 29.3	I	18 39 30.82	31 3	+ 0.51	N	110 1 16.04	19 09	+ 2.38
Aug 4 16 52 24.3	II	1 45 51.9	51 85	- 0.10				
5 17 37 58.8	II	2 35 30.17	30 00	- 0.17				
23 8 6 38.5	I	18 15 45.46	46 03	+ 0.57	N	111 25 20.07	19 87	- 0.20
24 9 4 22.2	I	19 17 33.50	34 30	+ 0.80	S	109 8 29.18	25 00	- 1.18
Sept 20 6 59 7.7	I	18 58 25.37	25 72	+ 0.35	S	109 46 32.71	31 96	- .07
21 7 53 58.4	I	19 57 19.95	20 39	+ 0.14	S	106 44 25.74	23 04	- 2.70
24 10 21 57.2	I	22 37 28.72	29 67	+ 0.95				
25 11 7 33.9	I	23 27 8.89	10 33	+ 1.44	N	88 1 42.92	41 67	- 1.2
8 13 25 11.0	II	1 54 5.33	56 09	+ 0.76				
9 14 11 34.5	II	2 45 21.89	22 39	+ 0.50				
30 14 58 53.6	II	3 36 44.66	44 92	+ 0.26				
Oct 1 1 47 0.4	II	4 28 5.2	55 20	- 0.05				
2 16 35 35.3	II	5 21 34.63	34 02	- 0.61				
3 17 24 14.2	II	6 11 17.90	17 38	- 0.2				
18 5 50 15.9	I	19 39 44.77	45 30	+ 0.3	S	107 33 18.69	13 11	- 5.8
19 6 43 1.4	I	20 36 33.68	31 23	+ 0.5	S	103 51 9.87	2 13	- 7.74
21 9 19 30.9	I	22 21 8.64	9 26	+ 0.62	S	94 43 15.20	8 76	- 6.44
22 9 4 47.8	I	23 10 28.89	29 67	+ 0.78	S	89 50 0.9	58 73	- 2.22
3 9 49 15.2	I	23 59 0.25	0 92	+ 0.67	S	85 2 16.20	17 37	+ 1.17
4 10 33 40.0	I	0 47 28.65	29 65	+ 1.00	S	80 32 4.98	4 43	+ 0.55
5 11 18 37.3	I	1 36 30.58	31 34	+ 0.76	N	76 30 28.78	30 90	+ 2.12
26 12 6 39.4	II	2 26 33.25	33 98	+ 0.73	N	73 7 41.47	42 78	+ 1.31
27 12 53 38.0	II	3 17 35.95	36 46	+ 0.51				
28 13 41 32.3	II	4 9 34.13	33 94	- 0.19				
31 16 6 24.3	II	6 46 39.52	39 22	- 0.30				
Nov 2 17 40 14.7	II	8 28 39.30	39 4	+ 0.15				
3 18 26 23.0	II	9 18 51.99	52 39	+ 0.40				
17 6 17 34	I	22 20 46	21 00	+ 0.54	S	96 7 9.27	6 53	- 2.71
18 7 3 30.9	I	2 55 20.16	20 75	+ 0.59	S	91 14 25.00	22 45	- 2.55
19 7 48 2.4	I	23 43 51.40	55 11	+ 0.65	S	86 25 24.80	24 7	- .00
20 8 32 3.9	I	0 31 59.76	0 26	+ 0.50	S	81 51 32.02	32 80	+ 0.78
21 9 16 23.0	I	1 20 22.82	23 05	+ 0.23	S	77 42 53.62	57 26	+ 3.64
22 10 1 32.4	I	2 9 37.37	37 09	+ 0.32	S	74 9 15.94	17 67	+ 1.73
23 10 47 52.9	I	3 0 1.73	2 32	+ 0.59	S	71 19 42.77	44 10	+ 1.33
24 11 35 21.8	I	3 51 35.73	36 01	+ 0.28				
25 12 25 51.0	II	4 44 3.77	3 82	+ 0.05				
26 13 14 25.9	II	5 36 43.29	43 38	+ 0.09				
27 14 2 39.6	II	6 29 1.70	2 41	+ 0.71				
28 14 50 5.2	II	7 20 31.79	32 02	+ 0.23	S	71 34 23.12	20 32	- 2.80

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE MOON'S CENTER *Continued*

M	S	T	m	f	I	II	R	f	m	A	R	f	Err	f	N	A	N	S	N	I	D	f	m	N	P	D	E	f	N	A
1811																														
N	29	1	36	28.2	II		8	10	30	77		+0.12		S		74	29	19	22		19	38		+0.16						
	30	16	21	57.4	II		9	0	32	06		+0.00		S		78	9	3	13		58	90		-4.23						
D	1	17	6	73	II		9	49	37	71		+0.09		S		82	25	2	27		16			-0.02						
	1	32	7		I		3	31	2	71		+0.28		S		69		37	41		42	01		+4.57						
	22	10	20	07	I		1	26	26	2		+0.43		S		68	36	32	20		3	14		+2.94						
181																														
Ia	1	7	8	70	I		3	10	31	01		+0.73		S		70	44	59	34		11			+1.78						
	18	8	1	30	I		4	8	11	81		+0.5		S		69	4	21	88		25	29		+3.41						
	19	3	6		I			0	32	80		+0.18		S		68	22	10	21		41	93		+4.69						
	20	9	2	30	I			3	13	12		+0.00		N		68	42	30	2		36	72		+6.47						
	21	10	10	8	I		6	1	41	34		+0.08		N		70	3	40	88		45	73		+4.8						
	22	11	28	41.0	I		7	37	30	28		+0.31		N		72	22	42	27		46	70		+4.43						
	23	1	16	37	II		8	8	27	14		+0.18		S		71	33	27	33		26	03		-1.30						
	1	13	3	3	II			18	27	34		+0.02		S		72	26	50	10		26	0		+2.50						
	13	18			II		10	7	3			+0.31																		
	20	14	11	10.0	II		10	57	12	17		+0.50		S		88	38	55	32		55	36		+0.04						
	8	16	7	7	II		12	38	31	37		+0.41		S		98	23	5	36		6	38		+1.02						
	9	16	7	7	II		13	32	17	2		+0.38		S		102	51	51	38		52	86		-1.52						
	30	17	17	46.0	II		14	29	0	21		+0.38		S		106	42	43	62		41	18		-2.41						
I	11	6	9	30	I		3	18	12	8		+0.68		S		69	1	28	13		26	03		-1.0						
	1	6	57	43.1	I		1	40	2	74		+0.82		S		68	4	19	18		18	08		-1.40						
	16	7	16	81	I			32				+0.16		S		68	3	13	41		43	78		+0.37						
	17	8	31	21.0	I		4	2	20	7		+0.20		N		63	3	0	88		5	67		+1.77						
	18	9	2	24.4	I		7	17	20	08		+0.01		N		71	29	10	93		29	92		+0.99						
	19	10	1	10.7	I		8	8	40	8		+0.08		N		71	17	57	04		8	10		+1.06						
	0	10	6	18.4	I		8		21	3		+0.11		N		77	3	8	39		9	04		+0.6						
	1	11	42	27.0	I			11	31	00		-0.04		S		82	8	23	79		20	32		-3.47						
	22	12	23	30	II		10	31	4	03		+0.12		S		80	50	12	53		8	73		-3.80						
	23	13	17	14.3	II		11	30	26	7		+0.14		S		91	46	26	73		16	26		-10.47						
	24	14		12	II		12	22	16	97		-0.07		S		96	41	47	7		45	14		-2.65						
	25	14	51	40.6	II		13	1	59	3		+0.24		S		101	20	29	06		26	47		-2.57						
	26	15	46	15.3	II		14	12	8	13		+0.39		S		10	24	39	83		35	13		-4.40						
	27	16	41	42.4	II		15	10	58	85		+0.87		S		108	35	59	86		9	31		-0.57						
	28	17	38	46.7	II		16	12	18	01		+0.76		S		110	37	46	17		40	46		-5.71						
M	17	7	11	38.8	I		6	5	40	70		+0.30		N		70	48	37	37		41	86		+4.1						
	18	8	1	47	I		7	46	3	36		+0.1		N		73	12	9	37		10	33		+1.76						
	19	8	18	11.1	I		8	37	28	38		-0.10		N		70	2	9	67		11	15		+1.48						
	20	9	31	28.7	I			27	41	2		-0.10		N		80	20	31	00		34	17		+3.17						
	1	10	0	33.3	I		10	17	56	33		+0.08		N		81	49	18	14		20	29		+2.15						
	22	11	7	27	I		11	8	13	90		-0.11		N		89	10	17	11		16	60		-0.1						
	23	11	55	32	I		12	1	0	30		+0.06		S		91	39	36	38		29	63		-6.7						
	24	12	17	43.2	II		12		137		+0.10		S		99	30	43	07		38	33		-4.74							
	25	13	40	24.8	II		13	51	3	11		+0.17		S		103	53	36	40		31	34		-5.06						
	26	14	35	43.0	II		14	1	1	71		+0.80		S		107	28	11	18		42			-6.93						
	27	1	33	26.4	II		1	3	4	08		+0.91		S		109	55	13	91		57	4		-8.17						
	28	16	32	38.8	II		16	6	21		+0.52		S		111	0	28	9		18	21		-10.38							
	29	17	31	54.9	II		17	59	14	96		+0.82		S		110	37	50	04		38	35		-11.61						
Apr	11	5	1	18.0	I		7	25	29	61		-0.16		N		72	17	23	17		24	97		+1.80						
	1	6	10	26.4	I		8	1	41	62		+0.18		N		75	7	20	87		23	32		+3.05						
	16	7	25	58.0	I		9	5	17	36		+0.06		N		78	40	51	0		55	91		+4.41						
	17	8	11	21	I		9	54	44	39		+0.1		N		82	50	37	61		33	69		+2.08						
	18	8	7	14.7	I		10	44	41	93		-0.10		N		87	27	45	31		47	17		+1.86						
	19	9	41	22.7	I		11	35	55	58		-0.16		N		92	21	16	83		15	46		-1.37						
	20	10	33	3.4	I		12	29	14	32		+0.17		N		97	16	46	20		47	82		+1.62						
	21	11	25	37.2	I		13	25	22	55		+0.54		N		101	56	12	96		14	69		+1.73						

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE MOON'S CENTER (Continued)

M	S	lar	Time	I	II	A	R	f	m	A	R	from	E	f	N	A	N	S	N	P	D	f	m	N	P	D	f	m	E	f	N	A
Obs	ti			Limb		Obs	ati			N	A						Limb		Obs	rv	ti			fr	m	N	A					
1845																																
April	22	12	23	162	II	14	24	53	43	54	07		+ 064		S			105	58	15	12		13	43				—	1	69		
	24	14	22	294	II	16	32	17	76	18	60		+ 084		S			110	39	13	06		9	61				—	3	45		
	25	15	23	488	II	17	37	44	17	44	76		+ 059		N			110	47	44	94		39	84				—	5	10		
	27	17	21	210	II	19	43	30	96	31	67		+ 071		N			106	44	14	97		8	46				—	6	51		
May	15	6	48	229	I	10	22	25	80	26	25		+ 045		N			85	26	9	20		6	91				—	2	29		
	16	7	34	140	I	11	11	51	53	51	71		+ 018		N			90	6	44	53		43	68				—	0	85		
	18	9	11	40	I	12	56	53	45	53	90		+ 045		N			99	41	28	24		28	80				+	0	56		
	19	10	4	195	I	13	54	16	26	16	96		+ 070		N			104	2	33	55		35	88				+	2	33		
	20	11	1	298	I	14	55	34	88	35	81		+ 093		N			107	37	4	93		6	57				+	1	64		
	21	12	4	417	II	16	0	33	63	34	84		+ 121		N			110	1	4	34		3	32				—	1	02		
	22	13	7	389	II	17	7	37	21	38	15		+ 094		S			110	54	37	17		31	10				—	6	07		
	23	14	10	362	II	18	14	41	88	43	10		+ 122		N			110	10	4	02		2	15				—	1	87		
	24	15	11	274	II	19	19	41	34	42	49		+ 115		N			107	54	35	69		32	66				—	3	03		
	25	16	8	538	II	20	21	15	61	16	33		+ 072		N			104	26	23	41		23	72				+	0	31		
	26	17	2	365	II	21	19	5	47	5	91		+ 044		N			100	8	35	85		34	31				—	1	54		
J	14	7	0	268	I	12	32	20	22	20	89		+ 067		N			97	31	34	09		31	93				—	2	16		
	16	8	44	140	I	14	24	21	25	22	17		+ 092		N			105	54	17	54		16	49				—	1	05		
	17	9	42	136	I	15	26	29	13	30	05		+ 092		N			108	55	0	55		2	55				+	2	00		
	24	16	36	173	II	22	47	3	80	4	06		+ 026		N			92	22	37	75		30	66				—	7	09		
July	13	6	33	307	I	13	59	41	91	42	82		+ 091		N			104	11	12	27		15	68				+	3	41		
	17	10	29	530	I	18	12	34	82	35	04		+ 022		N			110	13	4	77		56	93				—	7	84		
	24	16	53	232	II	1	2	30	77	31	24		+ 047		N			80	11	4	70		3	62				—	1	08		
	25	17	40	582	II	1	54	9	10	9	48		+ 038		N			76	16	54	67		58	59				+	3	92		
A g	12	7	13	282	I	16	38	6	11	7	23		+ 112		N			110	25	10	07		10	50				+	0	43		
	13	8	13	351	I	17	42	20	53	21	65		+ 112		N			110	32	9	01		6	92				—	2	09		
	22	16	21	572	II	2	25	17	92	18	09		+ 017		N			74	33	25	88		21	76				—	4	12		
	23	17	10	443	II	3	18	9	88	10	08		+ 020		N			71	53	34	24		32	29				—	1	95		
S pt	9	6	5	165	I	17	20	6	50	7	09		+ 059		N			110	25	43	67		38	61				—	5	06		
	10	7	4	21	I	18	22	58	26	58	96		+ 070		N			109	37	57	09		57	55				+	0	46		
	11	8	2	247	I	19	25	26	48	27	44		+ 096		S			107	28	15	53		8	97				—	6	56		
	12	8	59	243	I	20	26	30	83	31	92		+ 109		S			104	6	6	57		58	19				—	8	38		
	13	9	54	293	I	21	25	40	10	41	45		+ 135		S			99	48	4	89		59	64				—	5	25		
	14	10	47	385	I	22	22	54	18	55	64		+ 146		S			94	54	50	61		42	91				—	7	70		
	17	13	21	562	II	1	7	18	06	19	12		+ 106		N			80	11	54	19		53	02				—	1	17		
	19	15	1	308	II	2	55	1	88	2	43		+ 055		N			73	9	45	58		49	08				+	3	50		
	20	15	51	153	II	3	48	50	87	51	30		+ 043		N			71	0	46	63		46	77				+	0	14		
	22	17	29	368	II	5	35	22	65	22	75		+ 010		N			69	44	11	41		13	45				+	2	04		
Oct	8	5	56	439	I	19	5	51	87	52	39		+ 052		S			108	6	22	53		18	09				—	4	44		
	9	6	52	534	I	20	6	5	87	6	56		+ 069		S			105	11	15	51		8	92				—	6	59		
	11	8	39	158	I	22	0	36	71	37	59		+ 088		S			96	55	55	42		47	27				—	8	15		
	20	16	9	549	II	6	5	51	16	50	95		— 021		N			70	15	33	86		35	81				+	1	95		
N v	7	6	35	566	I	21	43	25	16	25	25		+ 009		S			98	9	4	92		3	57				—	1	35		
	8	7	26	109	I	22	37	42	35	43	06		+ 071		S			93	25	31	98		28	90				—	3	08		
	9	8	15	52	I	23	30	40	78	41	43		+ 065		S			88	34	54	33		52	51				—	1	82		
	10	9	3	250	I	0	23	5	08	6	03		+ 095		S			83	52	52	25		52	67				+	0	42		
	16	14	2	131	II	5	44	14	98	14	67		— 031		S			69	58	36	16		24	88				—	11	28		
	18	15	37	244	II	7	27	36	60	36	69		+ 009		S			72	53	11	52		5	66				—	5	86		
	21	17	50	181	II	9	52	43	53	43	63		+ 010		S			82	36	41	76		35	94				—	5	82		
Dec.	6	6	13	159	I	23	14	58	41	59	10		+ 069		S			90	5	11	54		12	37				+	0	83		
	9	8	37	165	I	1	51	11	90	12	72		+ 082		S			77	1	29	90		31	54				+	1	64		
	10	9	25	482	I	2	43	48	44	48	86		+ 042		S			73	51	1	41		2	63				+	1	22		

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE MOON'S CENTER (Continued)

M	S	lar	T	m	I	II	A	R	fr	m	A	R	from	Err	f	N	A	N	S	N	P	D	from	N	P	D	from	Err	f	N	A
Ob	tl				Limb		Ob	val			N	A						Limb	Ob	rv	tl	n.	N	A							
1845				m																											
D	11	10	14	58.8	I		3	37	40.4		4	34		+ 0.30				S	71	31	43	75	44	74		+ 0.99					
	12	11	4	34.1	I		4	30	44.12		44	06		- 0.06				S	70	9	52	91	52	51		- 0.40					
	13	11	55	90	I II		5	24	20.38		19	90		- 0.48				N	69	48	24	30	27	78		+ 3.48					
	18	15	46	27.4	II		9	34	59.94		0	00		+ 0.06				N	81	0	30	37	21	88		- 8.49					
	19	16	29	12.2	II		10	21	48.29		48	38		+ 0.09				N	84	59	12	27	6	17		- 6.10					
	21	17	55	47.3	II		11	56	29.55		29	73		+ 0.18				N	93	35	44	61	35	20		- 9.41					
1846																															
Ja	5	6	35	20.0	I		1	35	22.90		23	75		+ 0.85				S	78	19	11	85	15	75		+ 3.90					
	6	7	23	41.4	I		2	27	49.00		49	77		+ 0.77				S	74	53	23	04	24	60		+ 1.56					
	9	9	50	25.3	I		5	6	46.78		46	98		+ 0.20				S	69	52	20	46	22	44		+ 1.98					
	10	10	39	5.2	I		5	59	31.44		31	58		+ 0.14				S	70	8	28	36	29	11		+ 0.75					
	12	12	14	33.1	I II		7	42	4.10		4	39		+ 0.29				S	73	25	18	02	10	13		- 7.89					
	13	13	0	44.0	II		8	31	21.08		21	35		+ 0.27				S	76	13	13	87	8	57		- 5.30					
	15	14	27	37.5	II		10	6	21.73		21	88		+ 0.15				S	83	26	22	79	18	30		- 4.49					
	16	15	10	12.2	II		10	52	59.90		0	15		+ 0.25				S	87	33	59	22	1	30		+ 2.08					
	17	15	53	5.0	II		11	39	55.37		55	53		+ 0.16				S	91	50	28	28	25	56		- 2.72					
	18	16	37	2.1	II		12	27	55.22		55	43		+ 0.21				S	96	6	37	56	33	71		- 3.85					
	19	17	22	54.6	II		13	17	50.88		51	18		+ 0.30				S	100	12	0	51	56	22		- 4.29					
F b	3	6	8	42.5	I		3	3	2.47		2	92		+ 0.45				S	73	18	37	74	40	37		+ 2.63					
	4	6	58	6.6	I		3	56	31.00		31	43		+ 0.43				S	71	16	3	71	3	85		+ 0.14					
	5	7	47	17.4	I		4	49	46.39		47	00		+ 0.61				S	70	12	3	78	0	42		- 3.36					
	6	8	36	0.4	I		5	42	33.50		33	77		+ 0.27				S	70	6	56	06	54	45		- 1.61					
	9	10	56	22.9	I		8	15	5.83		5	82		- 0.01				N	75	14	1	01	0	64		- 0.37					
	10	11	40	49.9	I		9	3	36.43		36	31		- 0.12				S	78	23	54	11	44	27		- 9.84					
	12	13	9	24.6	II		10	38	19.09		19	04		- 0.05				S	86	5	55	45	48	52		- 6.93					
	15	15	21	6.5	II		13	2	10.40		10	85		+ 0.40				S	98	42	17	21	17	41		+ 0.20					
	16	16	8	9.1	II		13	53	15.84		16	24		+ 0.40				S	102	29	35	33	24	51		- 10.82					
	18	17	50	30.9	II		5	43	44.07		44	41		+ 0.34				S	108	10	1	52	53	35		- 8.17					
Mar	5	6	30	58.0	I		5	23	37.52		38	11		+ 0.59				S	70	16	43	03	39	60		- 3.43					
	6	7	19	31.6	I		6	16	14.97		15	70		+ 0.73				S	70	47	23	95	20	30		- 3.65					
	7	8	6	51.2	I		7	7	36.88		37	25		+ 0.37				N	72	12	3	37	6	54		+ 3.17					
	8	8	52	50.2	I		7	57	40.12		40	76		+ 0.64				N	74	25	1	26	2	08		+ 0.82					
	9	9	37	37.8	I		8	46	31.87		31	96		+ 0.09				N	77	19	16	22	12	37		- 3.80					
	10	10	21	31.2	I		9	34	28.26		27	99		- 0.27				N	80	47	8	93	2	00		- 6.93					
	11	11	4	52.7	I		10	21	53.47		53	41		- 0.06				N	84	40	23	85	16	42		- 7.43					
	12	11	48	14.0	I		11	9	18.76		18	81		+ 0.05																	
	13	12	34	14.6	II		11	57	22.96		22	90		- 0.06				S	93	6	42	15	30	73		- 11.42					
	14	13	19	22.2	II		12	46	33.85		33	80		- 0.05				S	97	18	23	80	17	31		- 6.49					
	15	14	6	10.3	II		13	37	30.28		30	06		- 0.22				S	101	13	28	59	16	67		- 11.92					
	16	14	55	24.1	II		14	30	41.78		42	03		+ 0.25																	
	17	15	47	2.5	II		15	26	23.95		24	57		+ 0.62				S	107	19	15	11	8	46		- 6.65					
	18	16	41	8.9	II		16	24	34.07		34	49		+ 0.42				S	109	2	23	77	17	16		- 6.61					
	19	17	37	12.6	II		17	24	42.97		43	30		+ 0.38				S	109	36	21	57	14	11		- 7.46					
Apr	4	6	47	21.9	I		7	38	19.66		20	41		+ 0.75				N	73	37	36	94	36	21		- 0.73					
	5	7	32	40.1	I		8	27	40.72		41	41		+ 0.69				N	76	15	46	05	43	14		- 2.91					
	6	8	16	47.4	I		9	15	51.10		51	76		+ 0.66				N	79	29	52	80	50	67		- 2.13					
	7	9	0	12.6	I		10	3	19.89		20	32		+ 0.43				N	83	12	13	12	11	64		- 1.48					
	8	9	43	31.8	I		10	50	41.87		42	17		+ 0.30				N	87	14	51	22	50	19		- 1.03					
	9	10	27	21.6	I		11	38	36.01		36	05		+ 0.04				N	91	28	54	98	55	24		+ 0.26					
	10	11	12	22.6	I		12	27	41.73		41	90		+ 0.17				N	95	44	13	90	10	94		- 2.96					
	11	12	0	17.0	I II		13	18	39.87		39	72		- 0.15				S	99	48	51	36	42	03		- 8.83					
	12	12	50	35.2	II		14	11	58.08		58	03		- 0.05				S	103	28	29	77	20	21		- 9.56					
	13	13	42	22.2	II		15	7	49.69		49	89		+ 0.20				S	106	27	45	88	38	32		- 7.56					
	14	14	36	39.9	II		16	6	10.45		10	71		+ 0.26				S	108	31	49	55	40	19		- 9.36					
	15	15	32	50.2	II		17	6	25.36		25	75		+ 0.39				S	109	27	53	45	47	21		- 6.24					
	16	16	29	55.2	II		18	7	36.69		37	36		+ 0.67				N	109	8	27	90	24	43		- 3.47					

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE MOON CENTER (Continued)

Mean Solar Time of Observation	I II Limb	A R from Observation	A R from N A	Error in A	N S Limb	N P D from Observation	N P D from N A	Error in A
1846								
April 17 17 26 52.1	II	19 8 39 88	40 41	+ 0.53	N	107 32 57 35	54 38	- 2.97
May 4 6 54 33.5	I	9 43 46 42	47 11	+ 0.69	N	81 39 31 42	31 96	+ 0.54
5 7 37 32.9	I	10 30 49 46	49 73	+ 0.27	N	85 32 53 76	54 99	+ 1.23
6 8 20 44.7	I	11 18 5 15	5 62	+ 0.47	N	89 41 10 32	13 48	+ 3.16
7 9 4 55.7	I	12 6 21 06	21 55	+ 0.49	N	93 55 48 21	43 60	- 4.61
8 9 50 52.6	I	12 56 23 51	23 83	+ 0.32	N	98 5 58 62	57 83	- 0.79
9 10 39 17.2	I	13 48 53 98	54 41	+ 0.43	N	101 59 0 07	2 93	+ 2.86
10 11 30 38.1	I	14 44 21 49	21 81	+ 0.32	N	105 19 36 38	34 10	- 2.28
11 12 27 19.6	II	15 42 56 95	57 09	+ 0.14	N	107 50 42 89	45 32	+ 2.43
12 13 24 17.1	II	16 43 59 44	59 64	+ 0.20	N	109 16 5 89	6 38	+ 0.49
13 14 22 42.3	II	17 46 30 00	30 65	+ 0.65	N	109 24 32 74	33 14	+ 0.40
14 15 21 11.5	II	18 49 5 87	6 39	+ 0.52	N	108 12 41 79	43 18	+ 1.39
15 16 18 29.1	II	19 50 30 02	30 72	+ 0.70	N	105 46 17 85	17 49	- 0.36
16 17 13 50.6	II	20 49 57 00	58 13	+ 0.63	N	102 18 11 88	12 66	+ 0.78
June 3 6 58 1.3	I	11 45 22 14	23 17	+ 1.03	N	92 0 14 87	11 37	- 3.50
4 7 42 13.9	I	12 33 49 38	49 95	+ 0.57	N	96 10 39 74	36 43	- 3.31
5 8 28 47.2	I	13 24 28 50	29 00	+ 0.50	N	100 11 4 13	59 85	- 4.28
6 9 18 17.0	I	14 18 5 48	5 37	- 0.11	N	103 48 6 07	4 12	- 1.35
7 10 10 52.3	I	15 15 7 50	7 17	- 0.33	N	106 45 45 20	37 77	- 7.13
9 12 7 43.5	II	17 18 43 61	44 10	+ 0.49	N	109 32 41 66	44 10	+ 2.44
12 15 6 57.5	II	20 29 9 12	9 65	+ 0.53	N	103 45 3 03	3 39	+ 0.36
14 16 55 39.1	II	22 26 4 33	4 71	+ 0.38	N	95 2 17 82	12 85	- 4.97
15 17 46 55.7	II	23 21 26 46	26 84	+ 0.38	N	90 11 37 73	41 26	+ 3.53
July 3 7 7 47.1	I	13 53 38 41	39 28	+ 0.87	N	102 3 44 12	43 76	- 0.36
4 7 57 52.6	I	14 47 50 62	51 44	+ 0.82	N	105 19 6 38	0 79	- 5.59
5 8 51 34.4	I	15 45 40 14	40 72	+ 0.58	N	107 48 45 69	37 08	- 8.61
7 10 48 38.4	I	17 50 59 25	59 85	+ 0.60	N	109 24 0 91	53 75	- 7.16
8 11 49 39.5	I	18 56 6 94	8 03	+ 1.09	N	108 6 45 54	40 10	- 0.44
August 1 6 39 51.3	I	15 20 0 90	2 11	+ 1.21	N	106 36 19 91	14 64	- 5.27
2 7 33 44.5	I	16 18 0 77	1 90	+ 1.13	N	108 31 54 76	49 68	- 5.08
10 15 16 4.4	II	0 30 56 75	57 05	+ 0.30	N	85 37 3 81	4 98	+ 1.17
September 4 11 7 48.3	I	22 2 46 86	48 06	+ 1.20	N	97 18 13 61	9 23	- 4.38
29 7 0 21.1	I	19 33 12 37	12 98	+ 0.61	S	106 26 28 76	20 51	- 8.25
30 7 56 36.2	I	20 33 33 43	33 61	+ 0.18	S	103 26 7 28	58 08	- 9.20
October 1 8 52 22.0	I	21 33 24 46	25 05	+ 0.59	S	99 28 18 52	14 19	- 4.33
5 12 33 37.2	II	1 28 49 54	50 22	+ 0.68	N	80 17 49 66	54 14	+ 4.48
8 15 16 46.7	II	4 24 15 64	15 55	- 0.09	N	71 45 10 45	17 28	+ 6.83
9 16 9 32.2	II	5 21 6 96	7 27	+ 0.31	N	71 3 26 61	31 22	+ 4.61
29 7 37 46.9	I	22 8 59 75	0 06	+ 0.31	S	96 43 18 99	18 02	- 0.97
30 8 30 38.6	I	23 5 56 36	56 60	+ 0.24	S	92 0 8 14	8 03	- 0.11
31 9 23 26.7	I	0 2 49 37	49 68	+ 0.31	S	87 8 12 79	13 71	+ 0.92
November 2 11 10 30.1	I	1 58 4 25	5 13	+ 0.88	S	78 16 24 67	28 96	+ 4.29
3 12 7 19.7	II	2 56 47 78	48 29	+ 0.51	N	74 52 53 56	0 87	+ 7.31
4 13 2 6.3	II	3 55 40 17	40 76	+ 0.59	N	72 30 13 71	20 85	+ 7.14
5 13 56 24.5	II	4 54 4 20	4 82	+ 0.62				
7 15 40 27.6	II	6 46 18 72	19 54	+ 0.82	S	72 1 19 63	18 20	- 1.43
30 9 53 30.0	I	2 31 14 59	15 20	+ 0.61	S	76 15 56 66	2 49	+ 5.83
December 1 10 47 9.2	I	3 28 58 44	58 96	+ 0.52	S	73 26 39 30	42 97	+ 3.67
2 11 41 12.2	I	4 27 6 54	6 85	+ 0.31	S	71 39 16 78	17 38	+ 0.60
1847								
January 6 15 58 24.8	II	11 0 57 17	57 42	+ 0.25	S	87 6 18 13	9 29	- 8.84

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE MOON'S CENTER (Continued)

M S lar im Obsrv i	I Limb	A R m O serv i	R m N A	Erro f N A	N S Limb	N D m Observati	N P D from N A	Erro f N A
1847 d m		m						
Ja 7 16 40 25 2	II	11 47 0 81	1 02	+ 0 21	S	91 2 46 83	36 10	— 10 73
8 17 22 50 7	II	12 33 29 31	29 54	+ 0 23	S	94 58 2 64	54 23	— 8 41
25 7 30 11 7	I	3 48 19 44	20 08	+ 0 64	S	73 2 24 76	25 01	+ 0 25
26 8 22 15 2	I	4 44 27 79	27 68	— 0 11	S	71 33 20 37	20 79	+ 0 42
27 9 13 51 8	I	5 40 8 60	8 27	— 0 33	S	71 6 27 76	27 04	— 0 72
28 10 4 28 7	I	6 34 49 74	50 03	+ 0 29	N	71 40 13 15	14 31	+ 1 16
29 10 53 39 8	I	7 28 4 35	4 31	— 0 04	N	73 9 39 72	38 07	— 1 65
30 11 41 5 6	I	8 19 33 42	33 46	+ 0 04	S	75 26 59 16	52 91	— 6 25
Feb 1 13 12 49 0	II	9 57 23 69	23 76	+ 0 07	S	81 47 19 65	14 21	— 5 44
4 15 19 51 1	II	12 16 37 07	37 04	— 0 03	S	93 18 14 26	4 06	— 10 20
6 16 46 38 1	II	13 51 30 15	30 06	— 0 09	S	100 37 42 53	32 35	— 10 18
23 7 10 45 2	I	5 23 9 05	9 66	+ 0 61	S	71 20 49 14	46 44	— 2 70
24 8 1 38 8	I	6 18 6 58	7 41	+ 0 83				
25 8 50 58 6	I	7 11 30 17	30 55	+ 0 38	N	72 44 33 55	32 68	— 0 87
26 9 38 33 4	I	8 3 8 15	8 25	+ 0 10	N	74 44 5 12	1 37	— 3 75
27 10 24 23 7	I	8 53 1 48	1 58	+ 0 10	N	77 24 26 80	23 00	— 3 80
Mar 1 11 51 48 6	I	10 28 32 44	32 57	+ 0 13	N	84 11 36 28	33 17	— 3 11
2 12 36 13 1	II	11 15 2 85	2 96	+ 0 11	S	88 0 32 27	23 65	— 8 62
3 13 18 24 0	II	12 1 17 20	17 66	+ 0 46	S	91 53 55 88	45 56	— 10 32
4 14 0 57 9	II	12 47 54 16	54 52	+ 0 36	S	95 43 12 54	5 73	— 6 81
5 14 44 28 9	II	13 35 27 97	28 05	+ 0 08	S	99 19 38 85	29 30	— 9 55
6 15 29 28 7	II	14 24 30 94	31 14	+ 0 20	S	102 33 52 40	42 63	— 9 77
9 17 57 19 4	II	17 4 31 58	31 60	+ 0 02	S	108 23 50 30	45 43	— 4 87
24 6 47 8 3	I	6 53 47 34	48 17	+ 0 83	N	72 23 8 89	13 50	+ 4 61
25 7 35 40 7	I	7 46 22 90	23 79	+ 0 89	N	71 7 3 85	1 26	— 2 59
26 8 22 8 9	I	8 36 53 84	54 71	+ 0 87	N	76 34 8 06	1 84	— 6 22
27 9 6 50 2	I	9 25 38 07	38 34	+ 0 27	N	79 35 15 35	8 03	— 6 42
29 10 32 39 2	I	10 59 33 58	33 99	+ 0 41	N	86 44 55 51	47 87	— 7 64
30 11 14 53 5	I	11 45 50 94	51 44	+ 0 50	N	90 36 27 38	20 80	— 6 58
31 11 57 26 1	I	12 32 27 14	27 62	+ 0 48	N	94 27 32 19	34 23	+ 2 04
April 1 12 42 53 3	II	13 19 59 60	59 47	— 0 13	S	98 9 50 10	39 42	— 10 68
3 14 14 10 3	II	14 59 22 88	22 93	+ 0 05	S	104 25 57 99	49 18	— 8 81
7 17 38 51 9	II	18 40 20 09	20 08	— 0 01	N	107 53 19 46	17 15	— 2 31
23 7 3 26 6	I	9 8 21 60	22 57	+ 0 97	N	78 27 14 79	12 57	— 2 22
26 9 12 25 6	I	11 29 29 77	30 88	+ 1 11	N	89 14 10 73	10 24	— 0 49
27 9 54 47 3	I	12 15 55 43	56 05	+ 0 62	N	93 6 39 60	35 50	— 4 10
May 1 12 59 14 9	II	15 34 37 54	37 53	— 0 01	N	106 2 46 34	50 85	+ 4 51
3 14 41 52 2	II	17 25 22 79	23 23	+ 0 44	N	108 32 0 87	0 64	— 0 23
4 15 35 12 4	II	18 22 47 29	47 70	+ 0 41	N	108 14 59 04	57 77	— 1 27
5 16 28 59 5	II	19 20 39 94	40 73	+ 0 79	N	106 52 37 72	35 60	— 2 12
6 17 22 40 9	II	20 18 26 50	27 20	+ 0 70	N	104 27 38 58	38 32	— 0 26
25 8 33 35 2	I	12 44 53 45	54 44	+ 0 99	N	95 22 30 69	28 52	— 2 17
26 9 17 24 1	I	13 32 47 24	48 03	+ 0 79	N	99 2 30 71	25 53	— 5 18
June 2 15 19 8 8	II	20 1 1 11	1 31	+ 0 20	N	105 26 46 98	52 02	+ 5 04
3 16 12 55 8	II	20 58 53 82	54 40	+ 0 58	N	102 21 56 62	63 32	+ 6 71
July 21 6 34 57 6	I	14 30 42 53	43 04	+ 0 51	N	102 28 29 51	29 27	— 0 24
Aug 20 6 52 40 0	I	16 46 47 34	48 48	+ 1 14	N	107 47 22 64	20 17	— 2 47
21 7 45 6 5	I	17 43 20 30	20 85	+ 0 55	N	108 23 34 39	31 31	— 3 08
23 9 35 39 3	I	19 42 5 75	6 84	+ 1 09	S	106 17 17 54	9 19	— 8 35
25 11 28 56 1	I	21 43 34 60	35 32	+ 0 72	N	99 45 21 60	18 10	— 3 50

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE MOON'S CENTER (Continued)

M	lar Tim	f	I II	A R from	A R fr m	Erro f N A	N S	N P D fro	N P D	Erro f N A
Observati n.			Limb	Obse vati n.	N		Limb	Observ lo	rom N	
1847	d	h	m	h	m					
Sept 18	6	27	44 7	I	18 16 8 83	9 68	N	108 8 44 17	46 13	+ 1 96
20	8	16	4 6	I	20 12 40 74	41 15	S	104 56 44 58	36 88	- 7 70
Oct 18	6	59	2 9	I	20 45 48 96	49 29	S	103 17 36 03	33 97	- 2 06
19	7	52	30 3	I	21 43 21 99	22 71	S	99 44 4 77	4 37	- 0 40
20	8	46	26 0	I	22 41 23 21	23 71	S	95 27 4 63	6 35	+ 1 72
22	10	36	38 8	I	0 39 48 35	48 72	S	85 48 48 34	48 87	+ 0 53
26	14	31	0 0	II	4 48 19 04	19 95	N	72 17 37 85	44 13	+ 6 28
Nov 16	6	37	22 4	I	22 18 24 37	24 86	S	97 21 15 00	12 45	- 2 55
20	10	12	39 3	I	2 10 5 19	5 83	S	79 11 45 35	45 16	- 0 19
23	13	10	36 1	II	5 18 5 46	6 13	S	71 45 20 55	20 38	- 0 17
27	16	44	30 8	II	9 8 27 43	28 08	S	77 46 28 87	27 34	- 1 53
Dec 21	11	50	1 9	III	5 48 50 94	51 51	S	71 31 27 32	25 62	- 1 70

SIDEREAL TIME OCCUPIED BY THE MOON'S DIAMETER PASSING THE MERIDIAN
COMPARED WITH THE NAUTICAL ALMANAC

D	O	N A	Dif	D	O	N A	D
	Sec RA INTER AL				S I		
	m				m		
1831 Feb 26	2 7 48			1838 Jan 10	2 19 62	19 32	- 0 30
Apr 1 26	3 06			May 9	15 12	14 76	- 0 36
May 26	7 16			1839 Feb 27	6 76	6 88	+ 0 12
Sept 21	12 48			April 28	7 57	7 32	- 0 25
1833 May 3	14 26			1842 July 22	9 52	9 82	+ 0 30
July 1	15 70			Sept 19	1 52	1 56	+ 0 04
1834 Feb 23	23 48	23 42	- 0 06	Oct 19	8 30	8 54	+ 0 24
1835 Mar 14	18 16	17 66	- 0 50	1843 Feb 14	20 10	19 70	- 0 40
April 13	20 02	20 48	+ 0 46	April 14	24 12	23 80	- 0 32
May 12	26 62	26 22	- 0 40	May 13	27 68	27 6	- 0 06
June 10	31 68	31 46	- 0 22	1845 Jan 23	8 28	8 14	- 0 14
1836 Feb 2	15 68	15 32	- 0 36	Feb 22	8 00	7 86	- 0 14
April 1	13 16	12 86	- 0 30	1846 Jan 12	7 30	6 94	- 0 36
1837 Jan 21	14 70	14 20	- 0 50	April 11	9 51	9 48	- 0 03
Mar 21	5 32	5 30	- 0 02	June 9	24 64	24 15	- 0 49
April 20	12 08	11 64	- 0 44	1847 Dec 21	21 10	20 86	- 0 24

The first limb is tested enough

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF MERCURY (Continued)

M	S	lar	Time	f	P i t Ob	A R from	A R from	Err	f N A	P i Ob	N P D from	N P D	Err	f N A
Obs	rv	ti			rved	Ob	ti	NA		rved	Obs	rvati	from	
													NA	
1831														
Mar	11	22	56	64	C	22	12 35 78			C	103	20 16 78		
	12	22	58	210		22	18 47 19				102	49 24 95		
	16	23	7	01		22	43 13 97				100	33 18 72		
	19										98	38 14 25		
	21	23	19	41		23	15 2 56				97	15 30 74		
	24	23	26	541		23	34 43 61							
	28	23	38	76		0	1 45 23				91	49 33 11		
	30	23	44	75		0	15 39 01				90	6 56 01		
July	1	22	43	248		5	21 35 89				68	9 3 60		
	5	22	57	554		5	51 44 11				67	2 15 40		
	7	23	6	351		6	8 19 47				66	38 12 74		
	10	23	21	39		6	34 40 39				66	18 11 10		
1832														
F b	18	22	52	278		20	44 22 92				109	33 36 04		
Mar	12	23	49	327		23	13 5 84				97	9 23 00		
Apr	2	0	52	558		1	35 30 68							
	3	0	55	458		1	42 17 52				78	12 37 78		
	4	0	58	280		1	48 56 37				77	23 9 83		
	5	1	0	586		1	55 23 09				76	35 40 24		
	7	1	5	275		2	7 47 14				75	7 20 05		
	9	1	8	583		2	19 12 22				73	48 46 86		
	10	1	10	245		2	24 35 39				73	13 25 73		
Oct	6	23	7	268		12	10 54 23				89	6 17 93		
Nov	5	0	18	343		15	11 35 35				108	41 20 51		
	10	0	25	111		15	42 56 69				111	5 11 06		
	12	0	29	564		15	55 36 31				111	55 34 49		
	15	0	37	124		16	14 42 77				113	3 3 75		
	18	0	44	333		16	33 55 71				113	0 2 07		
	19	0	47	24		16	40 21 68				114	16 35 09		
	23	0	56	517		17	5 58 04				115	10 5 18		
D	1	20	458			18	17 14 48				115	36 50 24		
	8	1	22	506		18	31 9 31				115	11 47 64		
1833														
Ma	18	0	59	330		0	42 2 21				84	51 3 12		
	23	1	9	08		1	11 15 29				80	42 16 69		
	25	1	10	586		1	21 6 36				79	17 51 42		
	26	1	11	283		1	25 32 76				78	39 43 22		
	27	1	11	374		1	29 38 62				78	6 37 16		
	28	1	11	242		1	33 21 79				77	32 37 21		
	29	1	10	480		1	36 42 12				77	3 49 69		
Ap	1	1	6	367		1	44 19 53				75	58 5 30		
May	28	22	36								75	8 54 34		
	31	22	50	365		3	21 57 46				73	21 10 36		
J ly	17	1	50								74	45 51 48		
Oct	19	0	21	138		14	11 17 32				103	39 35 34		
	21	0	25	154		14	23 12 66				104	54 16 25		
Dec	23	22	27	301		16	37 26 89				109	32 17 80		
	25	22	24	448		16	43 33 15				109	58 28 63		

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF MERCURY (*C nt u d*)

M S la Tim f	P int Ob- rved	A. R f m Ob tl	A R from N A.	Erro f N A	P int Ob ed	N P D fr m Ob rv tl	N P D f m N A	Er f N A
1834								
Jan 16 22 58 26 2	C	18 43 6 06	6 03	-0 03	C	113 45 33 87	35 68	+ 1 81
17 23 0 58 7		18 49 36 32	36 47	+ 0 15		113 45 5 92	8 68	+ 2 76
19 23 6 15 3		19 2 45 39	45 22	-0 17		113 40 21 13	25 56	+ 4 43
22 23 14 23 9		19 22 45 12	45 12	0 00		113 23 23 59	30 22	+ 6 63
24 23 19 58 7		19 36 14 08	14 44	+ 0 36		113 5 24 78	27 42	+ 2 64
26 23 25 40 7		19 49 50 13	50 07	-0 06		112 41 50 81	51 55	+ 0 74
27 23 28 33 5		19 56 39 93	39 91	-0 02		112 27 53 26	56 88	+ 3 62
29 23 34 24 5		20 10 23 46	23 28	-0 18		111 55 47 94	49 88	+ 1 94
Feb 2 23 46 12 9		20 38 1 69	1 86	+ 0 17		110 34 7 14	10 85	+ 3 71
18 0 31 48 7		22 22 52 84	52 64	-0 20		101 57 25 40	26 74	+ 1 34
19 0 34 50 1		22 29 51 66	51 45	-0 21		101 11 34 43	35 58	+ 1 15
20 0 37 50 7		22 36 49 02	49 21	+ 0 19		100 24 29 53	29 47	-0 06
21 0 40 49 9		22 43 45 59	45 53	-0 06		99 36 10 47	12 13	+ 1 66
23 0 46 43 0		22 57 32 34	32 41	+ 0 07		97 56 22 45	23 49	+ 1 04
24 0 49 34 9		23 4 21 41	21 75	+ 0 34		97 5 6 93	5 61	-1 32
25 0 52 23 6		23 11 7 61	7 65	-0 06		96 13 3 25	1 42	-1 83
26 0 55 8 1		23 17 48 50	48 90	+ 0 40		95 20 21 91	20 39	-1 52
27 0 57 46 4		23 24 25 33	24 88	-0 45		94 27 16 58	13 24	-3 31
28 1 0 18 7		23 30 54 51	54 47	-0 04		99 33 47 16	51 84	+ 4 68
Ma 1 1 2 45 7		23 37 16 50	16 38	-0 12		92 40 31 93	29 30	-2 63
3 1 8 6 4		23 50 32 19	32 11	-0 08		90 54 44 45	37 63	-6 82
4 1 8 59 8		23 55 22 42	22 35	-0 07		90 2 52 41	49 62	-2 2
1835								
Feb 13 1 8 28 0		22 38 58 94	58 99	+ 0 05				
15 1 12 41 6		22 51 6 71	6 50	-0 21				
Apr 1 28 22 48 41 5		1 14 31 91	31 21	-0 70		84 38 40 13	43 04	+ 2 91
30 22 53 38 1		1 27 22 11	21 82	-0 29		83 10 13 48	17 15	+ 3 67
May 1 22 56 17 8		1 33 58 69	58 38	-0 31		82 24 57 70	0 63	+ 2 93
10 23 26 33 6		2 39 47 47	47 51	+ 0 04		75 18 54 38	59 80	+ 5 12
June 19 1 49 29 1		7 36 52 65	52 82	+ 0 17		67 35 1 85	6 22	+ 4 37
Sept 26 0 59 59 7		13 17 34 13	33 97	-0 16		99 6 5 78	6 57	+ 0 79
27 1 1 22 7		13 22 54 09	53 76	-0 33		99 45 48 54	54 59	+ 6 05
28 1 2 43 2		13 28 11 09	11 11	+ 0 02		100 25 1 80	3 43	+ 1 63
Oct 17 1 17 18 0		14 57 42 77	42 80	+ 0 03				
23 1 11 50 8		15 15 52 23	52 28	+ 0 05				
Nov 23 22 29 10 6		14 38 57 41	57 20	-0 21		103 20 53 55	50 40	-3 15
24 22 29 8 8		14 42 52 50	52 51	+ 0 01				
27 22 30 42 1		14 56 15 32	15 09	-0 23				
Dec 3 22 38 42 0		15 27 56 40	56 33	-0 07				
11 22 55 6 7		16 15 55 76	55 84	+ 0 08				
17 23 10 0 6		16 54 30 35	30 57	+ 0 22		112 48 36 61	39 95	+ 3 34
24 23 29 23 0		17 41 32 41	31 92	-0 49				
25 23 32 17 0		17 48 24 17	23 89	-0 28		114 29 7 45	10 37	+ 2 92
28 23 41 14 0		18 9 11 47	11 33	-0 14				
29 23 44 15 5		18 16 10 63	10 59	-0 04				
1836								
Jan 16 0 38 20 1		20 17 25 55	25 00	-0 55				
19 0 47 45 8		20 38 42 64	42 40	-0 24		110 33 13 59	12 52	-1 07
21 0 53 52 8		20 52 43 47	43 22	-0 25		109 33 24 68	15 86	-8 82
22 0 56 51 2		20 59 38 76	38 98	+ 0 22		109 1 0 10	2 92	+ 2 82

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF MERCURY (*C nt u d*)

M S l Tm f	P int Ob	A R fr m	A R from	Erro f N A	P i Ob	N P D fr m	N P D	Err f N A
Ob rv ti	ed	Ob ti	N A		rv d	Ob ti	fr m N A	
1836		m						
J 23 0 59 46 1	C	21 6 30 87	30 96	+ 0 09	C	108 27 25 48	23 60	— 1 88
26 1 8 0 9		21 26 36 64	36 72	+ 0 08		106 38 30 91	29 21	— 1 70
27 1 10 33 1		21 33 6 08	5 66	— 0 42		105 59 52 76	50 09	— 2 67
29 1 15 12 3		21 45 37 90	37 57	— 0 33		104 39 46 28	45 28	— 1 00
Feb 2 1 22 2 0		22 8 15 89	15 48	— 0 41		101 53 47 66	46 46	— 1 20
3 1 23 3 4		22 13 14 11	13 87	— 0 24		101 12 34 60	31 48	— 3 12
4 1 23 44 1		22 17 51 54	51 45	— 0 09		100 32 1 61	59 81	— 1 80
5 1 24 2 1		22 22 6 29	5 85	— 0 44		99 52 37 84	33 67	— 4 17
6 1 23 54 0		22 25 54 92	54 60	— 0 32		99 14 39 09	37 47	— 1 62
8 1 22 12 1		22 32 5 70	5 24	— 0 46		98 4 54 92	54 28	— 0 64
9 1 20 33 2		22 34 23 30	22 49	— 0 81		97 34 0 01	59 02	— 0 9)
10 1 18 18 9		22 36 5 58	4 87	— 0 71		97 6 15 77	15 86	+ 0 09
April 13 23 0 51 3		0 30 33 76	33 85	+ 0 09		89 10 44 11	51 23	+ 7 12
14 23 3 20 0		0 36 59 40	59 82	+ 0 42		88 25 11 13	17 05	+ 5 92
18 23 14 14 9		1 3 42 17	42 32	+ 0 15		85 14 11 87	19 70	+ 7 83
22 23 26 52 9		1 32 8 17	8 70	+ 0 53		81 52 4 22	4 28	+ 0 06
24 23 34 4 8		1 47 4 50	4 83	+ 0 33		80 8 12 23	13 09	+ 0 86
25 23 37 36 2		1 54 43 84	43 92	+ 0 08				
My 31 1 38 53 7		6 14 20 44	20 03	— 0 41		64 52 59 50	0 58	+ 1 08
J ly 19 22 39 39 7		6 31 45 13	45 19	+ 0 06		68 47 7 88	6 68	1 20
O t 6 1 12 29 4		14 12 30 79	30 65	— 0 14		106 8 27 86	22 93	— 4 93
No 22 22 56 34 1		15 5 28 70	28 38	— 0 32		106 19 48 69	53 58	+ 4 89
25 23 3 16 4		15 24 0 09	59 97	— 0 12		107 53 53 73	55 35	+ 1 62
D 4 23 25 30 1		15 21 46 49	46 06	— 0 43		111 52 14 02	13 11	0 91
1837								
Jan 3 0 52 57 2		19 43 49 04	48 95	— 0 09		113 28 49 32	48 79	— 0 53
7 1 4 49 2		20 11 29 49	29 30	— 0 19		112 3 31 51	31 19	— 0 32
8 1 7 36 8		20 18 14 01	13 76	— 0 25		111 38 25 84	20 91	+ 0 07
9 1 10 18 5		20 24 52 57	52 33	— 0 24		111 11 55 77	55 76	— 0 01
10 1 12 53 0		20 31 24 32	24 08	— 0 24		110 44 2 94	4 64	+ 1 70
24 1 21 29 0		21 35 13 00	12 83	— 0 67		103 25 24 86	23 05	— 1 81
Feb 19 22 37 21 1		20 37 5 09	4 21	— 0 88				
20 22 35 6 7		20 38 47 81	47 25	— 0 56		107 1 14 77	18 15	+ 3 38
Mar 1 22 28 11 6		21 7 20 03	19 70	— 0 33		106 52 17 01	18 01	+ 1 00
5 22 30 16 7		21 25 12 03	11 14	— 0 89		106 9 41 26	48 69	+ 7 43
6 22 31 6 9		21 29 59 02	58 77	— 0 25		105 50 33 57	38 53	+ 4 96
7 22 32 5 5		21 34 53 34	53 10	— 0 24		105 40 0 88	4 82	+ 3 94
8 22 33 8 8		21 39 54 01	53 66	— 0 35		105 23 3 20	8 59	+ 5 39
9 22 34 19 0		21 45 0 38	0 00	— 0 38		105 4 43 21	49 78	+ 6 57
10 22 35 33 3		21 50 12 39	11 72	— 0 67		104 45 5 14	9 77	+ 4 63
13 22 39 47 2		22 6 16 13	15 84	— 0 29		103 38 3 89	8 47	+ 4 68
16 22 44 39 2		22 22 58 39	57 97	— 0 42		102 19 16 55	19 35	+ 2 80
22 22 56 0 1		22 57 59 51	59 38	— 0 13		99 7 22 42	26 39	+ 3 97
23 22 58 3 8		23 4 1 64	1 33	— 0 31		98 31 1 66	8 72	+ 7 06
24 23 0 12 5		23 10 6 59	6 68	+ 0 09				
26 23 4 41 6		23 22 28 21	27 64	— 0 57		96 35 4 00	5 85	+ 1 85
27 23 6 57 3		23 28 43 19	43 39	+ 0 20		95 54 1 26	4 21	+ 2 95
28 23 9 19 9		23 35 2 47	2 71	+ 0 24		95 11 53 02	54 04	+ 1 02
29 23 11 47 6		23 41 25 93	25 71	— 0 22		94 28 39 85	36 05	— 3 80
30 23 14 16 6		23 47 52 60	52 66	+ 0 06		93 42 10 53	11 56	+ 1 03

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF MERCURY (Continued)

M S lar Tim f	P i t Ob	A R fr m	A R f m	Er f N A	P i t Ob	N P D from	N P D	Err f N A
Observ ti	d	Ob ti n.	N A		rv d	Ob atl	f m N A	
1837								
Apr 19 0 16 43.8	C	2 5 24 23	24 36	+ 0 13	C			
20 0 20 46.6		2 13 24 54	24 40	— 0 14		76 19 6 30	5 06	— 1 24
21 0 24 51.2		2 21 26 19	26 22	+ 0 03		75 26 56 32	54 91	— 1 41
25 0 41 6.4		2 53 30 57	30 72	+ 0 15		72 12 54 50	52 66	— 1 84
26 0 43 3.8		3 1 25 05	24 75	— 0 30		71 29 2 64	3 05	+ 0 41
30 0 59 51.0		3 32 1 78	2 17	+ 0 39		68 56 17 01	11 04	— 5 97
M y 2 1 6 23.8		3 46 27 64	27 73	+ 0 09		67 54 37 75	32 53	— 5 22
3 1 9 22.5		3 53 23 70	23 89	+ 0 19		67 27 37 28	29 93	— 7 35
11 1 24 50.9		4 40 32 16	32 43	+ 0 27		65 7 42 68	44 34	+ 1 66
12 1 25 41.1		4 45 13 94	14 03	+ 0 09		65 11 25 79	26 48	+ 0 69
J ly 9 22 44 11.4		5 55 54 24	54 80	+ 0 56				
11 22 50 26.4		6 10 3 54	4 18	+ 0 64		67 19 11 55	10 38	— 1 17
18 23 20 7.0		7 7 25 62	25 65	+ 0 03		66 49 8 59	7 81	— 0 78
19 23 25 0.3		7 16 19 23	19 81	+ 0 58				
A g 7 0 46 38.3		9 49 5 48	6 07	+ 0 59				
9 0 53 1.4		10 3 22 51	22 80	+ 0 29		76 27 29 46	32 75	+ 3 29
28 1 28 33.4		11 53 54 96	54 92	— 0 04		90 6 33 84	34 52	+ 0 68
S pt 13 1 28 37.0		12 57 3 46	3 38	— 0 08				
20 1 15 7.2		13 11 7 39	7 06	— 0 33		101 30 16 47	18 03	+ 1 56
21 1 12 3.8		13 11 59 89	59 59	— 0 30		101 39 20 23	21 52	+ 1 29
22 1 8 39.8		13 12 31 71	31 22	— 0 49		101 45 20 23	22 95	+ 2 72
23 1 5 39.4		13 12 41 05	40 74	— 0 31		101 48 7 15	8 11	+ 0 96
1838								
J 7 1 24 28.3		20 30 14 69	14 34	— 0 35		109 7 10 77	11 70	+ 0 93
8 1 22 17.8		20 32 0 06	59 38	— 0 68		108 44 29 85	27 70	— 2 15
9 1 19 24.9		20 33 3 61	2 98	— 0 63		108 23 14 51	13 90	— 0 61
M 12 23 17 56.7		22 39 38 77	38 29	— 0 48		100 52 54 45	57 70	+ 3 25
14 23 22 59.2		22 52 34 82	34 35	— 0 47		99 34 7 69	11 10	+ 3 41
15 23 25 33.7		22 59 7 07	6 65	— 0 42		98 52 53 08	5 20	+ 2 12
18 23 33 34.7		23 18 58 95	58 67	— 0 33		96 41 44 67	48 60	+ 3 93
19 23 36 20.5		23 25 41 49	41 60	+ 0 11				
20 23 39 10.4		23 32 27 68	27 63	— 0 05		95 8 30 69	27 70	2 99
21 23 42 2.9		23 39 17 06	16 78	— 0 28		94 20 5 73	4 40	— 1 33
22 23 44 57.4		23 46 9 22	9 18	— 0 04		93 30 34 64	34 70	+ 0 06
April 19 1 10 4.7		2 57 57 34	57 35	+ 0 01		70 41 41 40	38 10	3 30
20 1 11 34.0		3 3 36 36	36 29	— 0 07		70 11 23 55	19 60	— 3 95
21 1 13 13.0		3 8 59 22	59 21	— 0 01		69 43 42 56	38 10	— 4 46
26 1 15 58.3		3 31 28 70	27 59	— 1 11		68 4 36 53	34 20	— 2 33
29 1 13 43.0		3 41 2 92	2 10	— 0 82		67 35 48 47	51 60	+ 3 13
30 1 12 16.8		3 43 32 28	31 96	— 0 32				
De 9 1 11 45.1		18 22 12 21	12 02	— 0 19		115 40 33 32	38 30	+ 4 98
10 1 13 58.9		18 28 22 83	22 58	— 0 25		115 35 18 75	22 00	+ 3 25
13 1 19 50.2		18 46 4 55	4 23	— 0 32		115 10 55 29	57 90	+ 2 61
14 1 21 25.7		18 51 36 76	36 46	— 0 30		115 0 3 35	5 10	+ 1 75
18 1 25 6.1		19 11 4 17	3 76	— 0 41		114 4 41 72	42 60	+ 0 88
21 1 23 48.4		19 21 36 10	35 70	— 0 40		113 14 0 61	58 40	— 2 21
22 1 22 19.4		19 24 3 51	2 91	— 0 60		112 56 10 86	9 40	— 1 46
24 1 17 12.9		19 27 1 09	0 67	— 0 42		112 20 29 06	28 80	— 0 26
1839								
Feb 18 23 10 20.9		21 4 18 25	18 06	— 0 19		108 40 3 45	8 18	+ 4 73
20 23 15 19.9		21 17 13 68	13 31	— 0 37		107 50 31 74	35 40	+ 3 66
21 23 17 53.2		21 23 43 17	43 32	+ 0 15		107 23 43 75	47 50	+ 3 75

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF MERCURY (*Continued*)

M S i T i m f	P i n Ob	A R f m	A. R f r m	Err f N A	P i t Ob-	N P D f m	N P D	E r o f N A
Ob s r v t i	r v e d	Ob s i	N A		r v e d	Ob s r v t i	f r m N A	
1839							/	
Feb 24 23 25 41 3	C	21 43 27 49	22 54	+ 0 05	C	105 55 13 84	16 60	+ 2 76
26 23 31 1 1		21 56 36 63	36 03	- 0 60		104 49 25 21	28 90	+ 3 69
28 23 36 26 3		22 9 55 78	55 61	- 0 17		103 38 10 17	15 90	+ 5 73
M r 1 23 39 11 4		22 16 38 20	37 65	- 0 55		103 0 31 95	37 80	+ 5 85
22 0 39 48 1		0 36 15 56	15 45	- 0 11		86 21 45 88	42 20	- 3 68
25 0 48 58 9		0 57 17 82	17 37	- 0 45		83 31 57 96	54 90	- 3 06
26 0 51 53 0		1 4 8 76	8 56	- 0 20		82 36 41 01	39 40	- 1 61
28 0 57 19 5		1 17 29 32	29 31	- 0 01		80 49 39 91	35 80	- 4 11
29 0 59 49 8		1 23 56 41	56 15	- 0 26		79 58 20 05	17 10	- 2 95
Ap l 3 1 9 9 3		1 53 0 32	59 99	- 0 33		76 11 33 12	32 70	- 0 42
9 1 10 45 2		2 18 15 77	15 43	- 0 34		73 9 48 24	46 60	- 1 64
J l y 5 0 44 36 7		7 35 13 96	14 48	+ 0 52		66 29 20 33	21 20	+ 0 87
O t 3 23 18 9 3		12 7 38 37	38 65	+ 0 28		88 51 2 01	6 40	+ 4 39
4 23 21 11 2		12 14 6 82	7 04	+ 0 22		89 36 10 50	14 80	+ 4 25
6 23 26 10 3		12 26 59 96	0 43	+ 0 47		91 7 23 46	28 90	+ 5 44
8 23 31 3 4		12 39 47 57	47 87	+ 0 30				
26 0 9 3 1		14 24 54 38	54 19	- 0 19				
27 0 11 12 0		14 31 0 02	59 98	- 0 04		105 15 58 65	6 20	+ 7 55
29 0 15 29 4		14 43 11 69	11 61	- 0 08		106 27 4 18	9 80	+ 5 62
1840								
F b 6 23 26 19 0		20 32 5 63	5 23	- 0 40		110 45 22 75	24 80	+ 2 05
7 23 29 7 8		20 38 50 97	50 46	- 0 51		110 24 16 36	20 30	+ 3 94
S p t 13 23 17 49						80 43 15 11	15 80	+ 0 69
Oct 9 0 20 21 0		13 32 12 62	12 43	- 0 19		99 34 13 35	16 90	+ 3 55
10 0 22 19 5		13 38 7 90	7 93	+ 0 03		100 15 49 06	56 00	+ 6 94
17 0 35 44 1		14 19 10 76	10 51	- 0 25				
18 0 37 36 6		14 24 59 99	59 89	- 0 10		105 24 31 06	33 50	+ 2 44
19 0 39 29 1		14 30 49 29	48 91	- 0 38		105 59 39 99	45 30	+ 5 31
20 0 41 20 8		14 36 37 90	37 55	- 0 35		106 34 5 84	8 00	+ 2 16
21						107 7 36 92	40 20	+ 3 28
1841								
F b 12 0 37 51 4		22 6 32 22	31 43	- 0 79		103 30 13 42	11 90	- 1 52
16 0 49 42						100 27 27 19	27 40	+ 0 21
17 0 53 33						99 38 57 89	57 60	- 0 29
19 0 58 2 1		22 54 21 60	21 81	+ 0 21		97 59 17 24	19 30	+ 2 06
27 1 14 27 2		23 42 22 49	22 03	- 0 46		91 13 30 76	28 30	- 2 46
S p t 17 0 19 59 5		12 4 9 21	9 57	+ 0 36				
20 0 26 38 7		12 22 38 89	39 39	+ 0 50				
21 0 28 44 2		12 28 41 32	41 92	+ 0 60				
24 0 34 41 9		12 46 30 01	30 12	+ 0 11				
27 0 36 35 4		12 52 20 40	20 36	- 0 04				
O t 16 1 8 34 3		14 47 12 63	12 13	- 0 50		108 27 4 72	7 70	+ 2 98
Dec 1 22 27 39 3		15 11 9 38	8 32					
2 22 27 16 4		15 14 42 03	41 55	- 0 48				
10 22 30 15 2		15 52 14 85	14 41	- 0 44				
1843								
J n 20 1 12 6 5		21 8 17 06	17 23	+ 0 17		108 4 11 20	13 60	+ 2 40
23 1 18 48 8		21 26 50 22	49 98	- 0 24		106 14 53 59	53 60	+ 0 01
Oct 24 22 46 8 2		12 57 56 99	57 38	+ 0 39		94 40 47 11	47 70	+ 0 59
Dec 26 0 47 36 0		19 4 11 17	11 18	+ 0 01				

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF MERCURY (C t d)

M	S	lar	T	m	f	I	t	Ob-	A	R	f	m	A	R	f	m	E	f	N	A	I	Int	O	N	I	D	f	m	N	P	D	f	m	E	f	N	A
Ob						d.			Ob				N	A							d			Ob					N	A							
1844																																					
J	3	1	10	55	6	C			19	59	7	15	6	82			-0	33			C			112	38	41	15	41	37			+	3	22			
	4	1	13	28	7				20	5	37	52	37	30			-0	22						112	15	39	25	41	56			+	2	31			
	8	1	22	11	4				20	30	7	94	7	76			-0	18						110	31	4	31	5	90			+	1	59			
	9	1	23	51	7				20	35	45	12	44	82			-0	30						110	2	27	55	25	77			-	1	78			
	11	1	26	22	3				20	46	9	28	8	88			-0	40						109	3	13	67	13	80			+	0	18			
	12	1	27	7	6				20	50	1	20	51	16			-0	04						108	33	10	67	9	63			-	1	04			
Feb	20	22	29	56	8				20	50	36	05	35	57			-0	48						108	9	4	62	53	36			+	5	74			
M	12	22	53	25					22	18	13	57	13	18			-0	39						102	54	41	96	47	42			+	5	46			
	17	23	4	0	2				22	47	32	30	32	01			-0	29						100	8	24	00	26	17			+	2	11			
	18	23	6	15	0				22	53	44	76	44	48			-0	28						99	31	2	07	29	51			+	6	44			
Ap	1	27	1	10	21	3			3	31	56	55	56	95			+	0	40				68	32	1	75	48	61			-	3	14				
	28	1	12	38	5				3	38	10	94	11	21			+	0	27																		
	9	1	14	41	9				3	44	10	88	11	07			+	0	19				67	41	58	10	5	13			-	2	97				
My	3	1	20	16	3				4	5	32	55	32	74			+	0	19																		
Jly	2	22	42	10	4				5	27	30	15	30	25			+	0	10				68	9	2	92	5	51			+	2	59				
	3	22	45	9	6				5	34	26	89	26	76			-0	13						66	30	5	78	5	6			-	0	16			
	14	23	33	35	1				7	6	23	16	23	79			+	0	63																		
	29	0	41	37	6				9	9	48	07	48	14			+	0	07																		
A	4	1	2	12	9				9	54	6	08	6	06			-0	02						75	40	50	61	53	89			+	3	28			
	6	1	7	48	9				10	7	36	05	36	50			+	0	45																		
	9	1	15	10																			79	10	54	09	58	68			+	4	9				
	16	1	27	47																			84	10	4	84	10	80			+	5	06				
	17	1	29	8	2				11	12	21	33	21	21			-0	12					84	52	20	27	23	93			+	3	66				
	18	1	30	22	2				11	17	31	74	31	61			-0	10					85	34	14	85	19	81			+	4	06				
	24	1	34	28	1				11	45	17	63	17	38			-0	25																			
S	7	1	29	54	4				12	35	55	93	55	75			-0	18					97	14	48	1	54	31			+	6	19				
	10	1	24	14	5				12	42	3	05	2	67			-0	38					98	17	28	51	33	51			+	0	0				
	1	1	19	8	0				12	44	49	29	48	96			-0	33					98	48	16	83	20	86			+	4	03				
	14	1	12	49	2				12	46	22	48	22	21			-0	27					99	8	28	95	34	16			+	5	21				
	19	0	50	45	7				12	43	58	09	58	06			-0	03																			
O	9	22	46	41	3				12	1	21	56	21	80			+	0	24				88	50	1	84	58	10			-	3	14				
	14	22	47	19	1				12	17	31	38	31	86			+	0	48				89	52	46	14	44	01			-	1	3				
	16	22	43	26	5				12	26	40	26	40	22			-0	01					90	43	1	61	55	49			-	6	12				
	17	22	44	26	2				12	31	37	98	38	23			+	0	2				91	12	29	36	9	80			+	0	44				
	20	22	48	39	0				12	47	41	39	41	71			+	0	32				92	53	58	54	2				-	3	02				
	21	22	50	21	0				12	53	19	83	20	21			+	0	38				93	30	59	93	5	0			-	0	35				
	22	22	52	9	0				12	59	4	69	4	95			+	0	26				94	9	13	50	13	13			-	0	37				
	23	22	54	1	5				13	4	54	57	54	94			+	0	37				94	48	21	55	21	73			-	0	22				
	24	22	55	58	8				13	10	48	85	49	20			+	0	35				95	28	12	12	12	62			+	0	50				
	25	2	57	59	7				13	16	46	27	46	75			+	0	48				96	8	33	58	31	07			+	0	09				
	26	23	0	3	6				13	22	47	03	47	25			+	0	22				96	49	15	14	16	10			+	0	96				
	29	23	6	26	7				13	41	0	51	1	13			+	0	62				98	51	57	09	59	75			+	2	66				
No	7	23	26	36	5				14	37	43	04	43	65			+	0	61																		
	29	0	19	40	3				16	52	43	53	43	46			-0	07					114	9	46	18	49	3			+	3	55				
De	3	0	31	3	4				17	19	51	05	51	14			+	0	09				115	1	44	75	47	34			+	2	59				
	4	0	33	52	9				17	26	40	54	40	76			+	0	29				115	11	23	50	27	39			+	3	89				
	6	0	39	40	2				17	40	21	84	21	98			+	0	14				115	26	34	92	39	40			+	1	48				
1845																																					
J	2	1	18	32	4				20	5	47	71	47	42			-0	29					110	12	24		4	22			+	3	02				
	5	1	5	9	5				20	4	12	16	11	55			-0	61					109	21	21	85	19	58			-	2	27				
	23	22	43	14	3				18	56	47	91	46	88			-1	03					110	0	49	08	48	89			-</						

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF MERCURY (*C nt used*)

M S i T m f	P int Ob	A R f r m	A R f m	Err f N A	P int Ob	N P D from	N P D	Er f N A
Ob ti	rv d	Obsc i	N A		rv d	Ob ti	from N A	
1845 m		m						
J n 26 22 34 28 6	C	18 59 0 78	49 56	— 1 22	C	110 27 20 06	22 93	+ 2 87
29 22 29 38 9		19 6 49 56	48 85	— 0 71		110 49 31 71	34 73	+ 3 02
F b 9 22 32 39 2		19 53 1 76	12 14	— 0 62		111 2 46 04	48 61	+ 2 57
10 22 33 56 2		19 58 25 89	25 72	— 0 17		110 57 19 85	25 38	+ 5 53
11 22 35 19 3		20 3 46 09	45 91	— 0 18		110 50 46 52	49 60	+ 3 08
13 22 8 23 5		20 14 43 80	43 72	— 0 08		110 33 52 77	55 99	+ 3 22
17 22 4 29 5		20 37 37 19	37 00	— 0 19		109 44 56 68	0 58	+ 3 90
18 22 47 2 8		20 43 30 46	30 20	— 0 26		109 29 29 83	33 29	+ 3 46
25 23 2 22 1		21 26 5 26	5 26	0 00		107 4 55 94	58 34	+ 2 40
26 23 4 40 0		21 32 20 19	20 05	— 0 14		106 39 0 98	2 73	+ 1 75
27 23 7 0 0		21 8 36 95	36 99	+ 0 04		106 11 46 40	49 04	+ 2 64
28 23 9 21 5		21 44 55 47	55 93	+ 0 46		105 43 16 94	17 40	+ 0 46
Ma 2 23 14 11 6		21 57 39 36	39 69	+ 0 33		104 42 10 60	15 30	+ 4 70
3 23 16 39 6		22 4 4 34	4 54	+ 0 20		104 9 42 60	46 05	+ 3 45
4 23 19 9 6		22 10 31 09	31 26	+ 0 17		103 35 53 17	58 38	+ 5 21
6 23 24 14 8		22 23 30 24	30 52	+ 0 28		102 24 26 89	28 29	+ 1 40
7 23 26 50 3		22 30 2 86	3 11	+ 0 25		101 46 44 37	46 21	+ 1 84
9 23 32 7 6		22 43 14 36	14 45	+ 0 09		100 27 28 07	30 29	+ 2 22
10 23 34 49 5		22 49 53 20	53 32	+ 0 12		99 45 57 05	57 66	+ 0 61
Ap l 2 0 43 45 3		1 25 45 00	45 56	+ 0 56		80 30 2 44	59 00	— 3 44
4 0 50 6 3		1 40 0 00	0 61	+ 0 56		78 42 35 23	30 98	— 4 25
5 0 53 7 6		1 46 58 74	58 90	+ 0 16		77 50 57 87	54 53	— 3 34
6 0 56 1 1		1 53 49 45	49 27	— 0 18		77 1 4 72	0 60	— 4 12
7 0 58 45 7		2 0 31 00	30 69	— 0 31		76 13 4 40	0 45	— 3 95
8 1 1 19 6		2 7 1 55	1 49	— 0 06		75 27 9 24	6 23	— 3 01
9 1 3 41 7		2 13 20 73	20 70	— 0 03		74 43 29 89	26 27	— 3 62
10 1 5 51 0		2 19 27 02	26 89	— 0 13		74 2 12 62	9 28	— 3 34
11 1 7 46 2		2 25 18 90	19 00	+ 0 10		73 23 26 86	22 70	— 4 16
12 1 9 26 4		2 30 55 91	56 05	+ 0 14		72 47 16 16	11 42	— 4 74
13 1 10 50 3		2 36 16 76	16 78	+ 0 02		72 13 41 90	39 69	— 2 21
14 1 11 57 3		2 41 20 36	20 46	+ 0 10		71 42 55 15	61 16	— 3 99
J 2 22 22 55 2		3 8 58 49	58 58	+ 0 09		76 7 12 60	19 34	+ 6 74
8 22 23 43 7		3 33 26 57	26 34	— 0 23		73 9 25 14	28 31	+ 3 17
11 22 27 15 4		3 48 —	47 93			72 42 38 68	40 23	+ 1 55
12 22 28 53 1		3 54 22 60	22 93	+ 0 33		72 15 53 10	55 45	+ 2 35
16 22 37 49 0		4 19 6 00	6 58	+ 0 58		70 26 37 97	38 02	+ 0 05
Aug 1 1 38 30 8		10 17 42 52	42 43	— 0 09		78 56 12 90	17 49	+ 4 59
3 1 41 7 4		10 28 12 37	12 46	+ 0 09		80 14 53 48	59 30	+ 5 82
12 1 45 51 4		11 8 25 54	25 65	+ 0 11		85 53 45 00	47 72	+ 2 72
22 1 35 45 8		11 37 44 07	43 96	— 0 11		90 53 42 66	45 33	+ 2 67
23 1 33 37 0		11 39 31 66	31 45	— 0 21		91 15 48 64	55 08	+ 6 44
S pt 25 22 47 30 0		11 7 1 71	1 57	— 0 14		83 24 16 58	10 14	— 6 44
26 22 47 4 5		11 10 31 72	31 67	— 0 05		83 32 57 45	56 38	— 1 07
28 22 47 25 7		11 18 49 11	48 68	— 0 43		84 3 11 48	6 72	— 4 76
29 22 48 13 1		11 23 30 04	30 29	+ 0 25		84 24 7 69	4 01	— 3 68
30 22 49 16 4		11 28 30 17	30 46	+ 0 29		84 48 33 30	30 87	— 2 43
Oct 1 22 50 35 5		11 33 46 31	46 31	0 00		85 16 11 77	8 78	— 2 99
2 22 52 8 5		11 39 16 04	16 26	+ 0 22		85 46 38 72	38 26	— 0 46
3 22 53 52 5		11 44 56 76	57 34	+ 0 58		86 19 41 56	40 10	— 1 46
8 23 4 20 4		12 15 9 26	9 58	+ 0 32				
10 23 8 56 7		12 27 39 80	39 84	+ 0 04		90 57 56 45	58 15	+ 1 70
N v 6 0 8 14 1		15 9 37 19	36 87	— 0 32		108 24 25 89	32 01	+ 6 12

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF MERCURY (Continued)

M an Solar Tim f	P i t Ob	A R f m	A R f m	Err f N A	P i n t Ob	N P D f m	N P D	Err f N A
Ob r v t	r v d	Ob r v t	N A		ed	Ob r v t n	f r m N A	
1845								
Nov 9 0 15 23 4	C	15 28 27 57	27 43	-0 14	C	109 55 8 92	13 94	+ 5 02
24 0 52 18 9		17 4 47 82	47 27	-0 55		115 3 41 65	45 83	+ 4 18
27 0 59 47 9		17 24 7 59	7 16	-0 43		115 31 50 02	54 31	+ 4 29
Dec 11 1 23 34 7		18 43 9 51	9 21	-0 30		114 54 52 72	48 60	- 4 12
1846								
Jan 11 22 29 22 3		17 54 38 61	37 90	-0 71		111 6 19 63	19 69	+ 0 06
12 22 28 6 4		17 57 18 68	17 96	-0 72		111 15 57 78	55 48	- 2 30
14 22 26 37 8		18 3 43 15	42 69	-0 46		111 35 4 33	4 70	+ 0 37
20 22 28 41 0	2	18 29 25 70	25 44	-0 26		112 23 2 04	6 06	+ 4 02
21 22 29 43 6	2	18 34 24 85	24 71	-0 14		112 28 38 70	42 17	+ 3 47
22 22 30 55 3	2	18 39 33 21	33 11	-0 10		112 33 24 29	25 64	+ 1 35
23 22 32 15 6	2	18 44 50 32	49 88	-0 34		112 37 9 31	13 10	+ 3 79
26 22 36 58 7	C	19 1 23 89	23 73	-0 16		112 42 25 99	30 64	+ 4 66
27 22 38 45 1		19 7 7 71	7 40	-0 31		112 42 2 75	7 04	+ 4 29
F b 2 22 50 53 6		19 43 7 07	6 91	-0 16		112 15 0 14	1 18	+ 1 04
4 22 55 37 6		19 55 35 87	35 63	-0 24		111 55 58 46	2 88	+ 4 42
5 22 57 59 8		20 1 54 25	54 11	-0 14		111 44 35 09	37 39	+ 2 30
6 23 0 23 8		20 8 15 05	15 13	+ 0 08		111 31 49 33	53 35	+ 4 02
8 23 6 18 4		20 21 4 10	3 88	-0 22		111 2 25 24	26 66	+ 1 42
9 23 7 49 2		20 27 31 56	31 32	-0 24		110 45 37 26	42 91	+ 5 65
10 23 10 21 5		20 34 1 10	0 59	-0 51		110 27 32 31	38 26	+ 5 95
14 23 20 46 8		21 0 14 06	14 06	0 00		109 1 40 99	41 04	+ 0 05
17 23 28 50 9		21 20 9 05	8 99	-0 06		107 42 41 86	45 03	+ 3 17
18 23 31 34 7		21 26 49 94	49 83	-0 11		107 13 37 54	39 82	+ 2 28
19 23 34 19 2		21 33 31 88	31 87	-0 01		106 43 7 33	11 19	+ 3 86
22 23 42 42 2		21 53 45 56	45 30	-0 26		105 3 18 94	23 63	+ 4 69
23 23 45 32 0		22 0 32 52	32 19	-0 33		104 27 15 70	20 94	+ 5 24
24 23 48 22 8		22 7 20 44	20 26	-0 18		103 49 52 47	55 31	+ 2 84
25 23 51 24 1		22 14 9 58	9 58	0 00		103 11 3 15	6 80	+ 3 65
Mar 11 0 30 24 7		22 44 40 55	40 11	-0 44		92 50 12 24	9 08	- 3 16
14 0 39 39 2		0 5 46 11	46 24	+ 0 13		90 3 2 99	3 49	+ 0 50
15 0 42 35 7		0 12 —	45 38			89 6 36 05	32 40	- 3 66
17 0 48 35 9		0 26 34 23	34 43	+ 0 20		87 13 26 19	22 49	- 3 70
18 0 51 27 4		0 33 22 36	22 37	+ 0 01		86 17 14 28	9 70	- 4 58
19 0 54 12 0		0 40 4 38	4 43	+ 0 05		85 21 31 36	29 82	- 1 54
20 0 56 49 8		0 46 38 61	39 29	+ 0 68		84 26 43 07	38 21	- 4 86
21 0 59 19 4		0 53 5 56	5 64	+ 0 08		83 32 55 13	49 93	- 5 20
22 1 1 38 7		0 59 22 04	22 01	-0 03		82 40 24 23	20 95	- 3 28
23 1 3 47 0		1 5 26 92	26 94	+ 0 02		81 49 30 03	26 49	- 3 54
24 1 5 41 9		1 11 19 17	19 06	-0 11		81 0 26 29	28 81	+ 2 52
25 1 7 23 3		1 16 56 64	56 74	+ 0 10		80 13 24 27	19 83	- 4 44
26 1 8 48 0		1 22 18 57	18 65	+ 0 08		79 28 34 94	35 05	+ 0 11
27 1 9 56 3		1 27 23 43	23 41	-0 02		78 46 22 12	19 58	- 2 54
28 1 10 45 9		1 32 9 73	9 66	-0 07		78 6 47 53	44 66	- 2 87
29 1 11 15 9		1 36 36 25	36 24	-0 01		77 30 3 37	59 69	- 3 78
31 1 11 13 1		1 44 26 66	26 21	-0 45				
April 1 1 10 38 1		1 47 47 68	47 68	0 00		75 58 11 39	7 81	- 3 8
2 1 9 39 6		1 50 46 10	45 90	-0 20		75 34 0 88	0 61	- 0 27
3 1 8 17 5		1 53 20 49	20 18	-0 31		75 13 19 29	17 73	- 1 56
5 1 4 20 5		1 57 15 44	15 43	-0 01		74 42 18 56	19 11	+ 0 55
9 0 51 34 1		2 0 13 34	12 65	-0 69		74 23 12 33	17 20	+ 4 87
May 7 22 30 37 4		1 33 13 37	13 06	-0 31		83 16 43 36	47 60	+ 4 24
10 22 25 3 9		1 39 28 76	28 65	-0 11		83 0 7 06	13 71	+ 6 65
11 22 23 40 0		1 42 1 13	1 43	+ 0 30		82 50 13 20	18 25	+ 5 05
14 22 20 45 8		1 50 56 35	56 39	+ 0 04		82 8 31 62	36 85	+ 5 23

RIGHT ASCENSIONS AND NORTH POLAR DISTANCE OF HE C										MERCURY (Contd)					
M	l	Time	f	P	Ob	A R f m	A R f m	E	f N A	P	(	N P D f m	N P D	E	f N A
Ob	ti			d		O	i			d		Ob	f m		
1846						m									
My	18	22	19	41	8	2	5	37	10	37	23	80	48	25	22
	19	2	19	52	6	2	9	45	37	45	64	80	24	34	23
	26	2	26	19	0	2	43	48	69	48	82	77	4	18	23
	29	22	31	48	6	3	1	8	90	9	20	75	20	18	91
Jly	9	1	28	2	1	8	35	33	9	34	27	69	41	11	80
Ag	5	1	41	30	3	10	30	31	76	31	60	84	0	23	5
Sept	6	22	57	41	4	9	57	26	7	26	47	78	16	16	76
	23	23	14	29	6	11	25	14	15	14	21	84	13	0	93
	28	23	28	8	4	11	58	28	15	28	53	87	50	20	32
	29	23	31	6	1	12	5	2	54	2	06	88	41	31	15
Oct	24	0	21	10	4	14	33	22	80	22	8	10	47	59	07
	26	0	28	16	8	14	45	23	00	22	84	106	07	18	29
	27	0	30	19	9	14	51	23	22	23	14	107	30	40	90
	30	0	36	31	7	15	9	2	67	20	39	109	5	29	6
N	2	0	42	4	6	15	27	30	33	30	03	110	31	49	25
	3	0	44	0	7	1	33	32	0	31	96	110	58	36	71
	4	0	46	55	8	15	39	34	3	33	94	111	24	22	61
	5	0	49	0	6	15	45	36	13	35	86	111	49	2	82
	6	0	51	5	6	15	51	37	71	37	51	112	10	40	15
	7	0	53	9	9	15	57	39	11	38	80	112	3	13	4
	16	1	10	3	7	16	50	36	7	36	17	115		49	74
D	1	2	39	32	4	16	41	4	20	3	0	109	14	7	77
1847															
J	7	22	31	30	8	17	36	6	80	6	56	112	23	11	21
	7	22	33	3	2	17	41	3	83	30	37	112	31	42	2
	8	22	34	4	9	17	47	12	48	11	05	112	45	2	3
	12	22	42	22	4	18	10	30	14	38	68	113	10	12	81
	13	2	44	30	4	18	16	41	30	43	72	113	2	9	17
	14	22	46	43	1	18	22	53	86	53	17	113	20	9	17
	15	22	48	59	0	18	29	7	07	6	75	113	33	11	07
	18	22	56	10	9	18	48	9	77	9	21	113	37	53	19
	21	23	3	49	5	19	7	39	16	38	87	113	30	0	82
	27	23	20	6	4	19	47	38	24	38	02	112	41	37	60
Fb	24	0	40	27	4	2	54	38	96	38	79	98	21	40	39
	5	0	43	24	6	23	1	33	23	33	23	07	34	3	3
	6	0	46	19	7	23	6	25	36	25	11	06	12	27	9
M	1	0	54	44	3	23	28	41	09	41	43	94	3	25	7
	3	0	59	51	9	23	41	45	71	46	09	02	1	36	87
	4	1	2	10	1	23	48	6	74	7	20	01	21	13	06
	5	1	4	4	3	23	04	18	96	19	16	90	28	17	18
	6	1	6	38	5	0	0	20	29	20	41	89	3	31	09
	8	1	10	8	9	0	11	44	18	44	34	87	3	4	1
	9	1	11	31	4	0	17	3	06	3	61	87	4	2	81
	10	1	12	37	0	0	22	5	50	5	58	86	10	5	12
	11	1	13	23	4	0	26	48	30	48	44	85	31	51	0
	12	1	13	49	2	0	31	11	01	10	54	84	49	17	03
	13	1	13	0	6	0	35	11	09	10	35	84	9	29	1
Al	1	21	22	6	4	0	21	36	86	37	15	89	37	43	71
	22	22	24	39	5	0	27	8	45	8	96	89	30	33	
	20	21	(3)									88	6	11	80
	28	22	20	19	6	0	46	27	22	28	20	88	4	57	71
My	C	2	23	(1)								81	37	50	02
	14	22	6	16	2	2	5	31	50	32	26	79	54	47	0
	20	22	52	4	1	2	45	1	19	1	32	75	5	8	3
	21	22	50	18	2	2	52	12	30	12	18	70	10	38	11

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF VENUS

M	S	lar	T	m	f	P	i	Ob	A	R	f	E	r	f	N	A	P	i	Ob	N	P	D	f	m	N	P	D	f	m	N	A
Ob						d			Ob	t	N	A					d			Ob	r	v	t	n.							
1831																															
F b	19	1	10	25	2	C			23	4	28	98					C			97	28	53	25								
	20	1	11	6	3				23	9	6	82								96	59	11	04								
	21	1	11	46	7				23	13	43	68								96	29	26	48								
	22	1	12	25	6				23	18	19	25								95	59	21	40								
	23	1	13	3	3				23	22	53	55								95	29	9	23								
	24	1	13	41	4				23	27	28	21								94	58	48	21								
	2	1	14	20	0				23	32	3	56								94	28	19	38								
	26	1	14	55	1				23	36	35	49								93	57	44	41								
M	2	1	17																	91	54	29	31								
	3	1	17	52	1				23	59	15	64								91	23	29	59								
	4	1	18																	90	52	24	08								
	5	1	19	0	7				0	8	17	48								90	21	21	57								
	6	1	19	35	5				0	12	48	93								89	50	16	80								
	7	1	20	8	7				0	17	18	80								89	19	12	49								
	8	1	20	42	9				0	21	49	57								88	48	2	73								
	10	1	21	50	8				0	30	50	91								87	45	56	30								
	11	1	22	24	5				0	35	21	22								87	14	54	85								
	12	1	22	58	3				0	39	51	63								86	43	56	84								
	13	1	23	32	8				0	44	22	61								86	13	4	70								
	14	1	24	6	9				0	48	53	45								85	42	21	61								
	17	1	25																	84	10	25	06								
	19	1	27	2	8				1	11	32	63								83	9	41	12								
	20	1	27	40	3				1	16	6	77								82	39	37	80								
	21	1	28																	82	9	45	72								
	22	1	28																	81	40	4	24								
	27	1	32																	79	14	19	01								
	28	1	32	46	2				1	52	46	18								78	45	55	87								
	29	1	33	27	6				1	57	24	20								78	17	46	71								
Ap l	2	1	36	21	0				2	16	4	20								76	28	2	19								
	10	1	42	51	1				2	54	7	65								73	4	53	84								
M y	22	2	31	37	4				6	28	37	43								64	45	12	75								
	23	2	32	52	7				6	33	49	29																			
	26	2	36	32	4				6	49	19	34								65	0	28	43								
	27	2	37	44	8				6	54	28	50								65	4	3	48								
	30	2	41	15	4				7	9	49	30																			
J	1	2	43	30	1				7	19	57	52								65	40	47	49								
	2	2	44	36	0				7	25	0	24								65	50	1	32								
	3	2	45	41	3				7	30	2	31								65	59	55	72								
	5	2	47	46	1				7	40	0	53								66	21	35	11								
	29	3	4	41	1				9	31	35	72								73	31	2	67								
J ly	2	3	5	45	1				9	44	20	40								74	42	28	96								
A g	12	2	50	31	7				12	11	2	38																			
	13	2	49	37	6				12	13	54	59								93	50	41	08								
	20	2	41	48	5				12	33	41	18								96	53	55	94								
D c	10	20	46	48	7	2 L			14	3	12	88								99	37	53	90								
1832																															
Jan	24	21	5	59	0				17	19	50	61								110	47	51	45								
	26	21	8	1	9				17	29	47	29								111	2	15	17								
	29	21	11	14	3				17	44	48	13								111	19	47	73								
	30	21	12	19	3				17	49	50	22																			
	31	21	13	23	6				17	54	52	60								111	28	33	71								

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF VENUS (Continued)

A	S	Time	f	P intOb d	A R f m Ob rv tl	A R f m N A	E f N A	I l t Ob d	N P D f m Ob rv tl	N P D fr m N A	Erro (N A
1832									/		/
F l	1	21	14	30 5	2 L	17 59 56 21		C	111 32 7 56		
	3	21	16	45 8		18 10 4 92			111 37 40 72		
	4	21	17	54 1		18 15 9 91			111 39 29 12		
	5	21	19	0 4		18 20 15 42			111 40 44 66		
	7	21	21	21 8		18 30 27 30			111 41 31 26		
	8	21	22	31 8		18 35 34 28			111 40 47 29		
	11	21	26	0 9		18 50 55 40			111 35 25 95		
	1	21	27	12 1		18 56 2 61			111 32 22 92		
	22	21	38	53 4		19 47 10 09			110 28 43 67		
	23	21	40						110 19 4 03		
	24	21	41	10 0		19 57 20 64			110 8 46 66		
	25	21	42	15 2		20 2 24 93			109 57 57 33		
	27	21	44	30 6		20 12 31 55			109 34 34 10		
	29	21	46	41 0		20 22 35 13			109 8 57 43		
M	1	21	47	45 5		20 27 36 54			108 55 12 41		
	2	21	48	48 6		20 32 36 44			108 41 1 55		
	3	21	49	51 4		20 37 36 03			108 26 16 61		
	4	21	50	54 0		20 42 34 88			108 10 0 70		
	5	21	51	55 7		20 47 32 66			107 55 11 26		
	7	21	53	54 6		20 57 26 11			107 22 5 14		
	11	21	57	43 5		21 17 1 75			106 9 59 16		
	12	21	58	39 2		21 21 54 02			105 50 48 68		
	13	21	59	33 5		21 26 44 02			105 31 11 20		
	15	22	1	18 8		21 36 23 79			104 50 30 41		
	17	22	3	0 5		21 45 59 34			104 8 23 23		
	19	22	4	39 9		21 55 31 65			103 24 33 19		
	26	22	9	59 6		22 28 27 31			100 39 58 79		
A g	13	0	24	39 7		9 51 31 40			75 35 43 94		
	17	0	28	2 5		10 10 41 59			77 18 33 61		
	20	0	30	24 3		10 24 53 40			78 32 48 63		
	21	0	31						78 59 48 98		
S pt	11	0	52	53 4		12 5 49 74			89 17 59 84		
	24	0	52	10 2		13 4 41 95			95 56 44 36		
	26	0	54	14 1		13 13 52 42			96 59 59 75		
	7	0	54	47 7		13 18 25 41			97 26 56 18		
O t	2	0	57	24 7		13 41 30 20			99 53 56 23		
	8	1	1	51 2		14 9 37 16			102 42 50 74		
	12	1	5	8 4		14 28 40 84			104 29 42 14		
	13	1	6	0 5		14 33 29 53			104 55 31 73		
	24	1	16	50 4		15 27 43 17			109 12 56 42		
	25	1	17	56 9		15 32 46 23			109 33 33 41		
	26	1	19	4 3		15 37 50 36			109 53 42 31		
	27	1	20	13 3		15 42 56 33			110 13 11 41		
	28	1	21	23 3		15 48 3 08			110 32 8 55		
	29	1	22	34 0		15 53 10 49			110 50 34 21		
	30	1	23	47 7		15 58 20 76			111 8 29 01		
	31	1	25	1 2		16 3 30 85			111 25 48 92		
Nov	1	1	26	15 9		16 8 42 27			111 42 29 31		
	3	1	28	49		16 19 9 33			112 14 3 48		
	4	1	30	7 8		16 24 24 55			112 28 51 68		
	5	1	31	26 7		16 29 40 52			112 43 50 00		
	10	1	38	17 2		16 56 14 91			113 44 8 08		
	12	1	41	7 4		17 6 58 81			114 3 46 89		
	16	1	46	56 3		17 28 34 52			114 34 29 54		

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF VENUS (C n t d)

M an S i T i m f O b r v d	P l t O b r v d	A R f m O b l	A R f m N	E r r f N A	P l t O b r v d	N P D f m O b l	N P D f m N A	E r r f N A
1832								
N 17 1 48 21 7	2 L	17 33 59 99			C	114 40 19 54		
18 1 49 53 4		17 39 25 47				114 45 24 16		
19 1 51 22 6		17 44 52 43				114 49 45 68		
23 1 57 21 5		18 6 37 81				114 59 51 40		
24 1 58 52 0		18 12 4 88				115 0 19 77		
1833								
April 5 2 40 41 9		3 34 56 47				65 32 39 58		
6 2 39 47 3		3 37 28 85				65 20 11 58		
May 6 1 0 53 0		3 56 34 24				64 40 14 83		
8 0 49 28 0		3 53 1 02				65 7 32 87		
23 23 10 59 1		3 17 20 99				70 33 46 46		
24 23 5 11 1		3 15 28 34				70 55 35 67		
28 23						72 16 53 05		
29 22						72 35 22 47		
31 22 28 18 6		3 6 5 63				73 9 33 48		
J ly 15 20 53 2 8		4 27 59 61				72 5 0 67		
23 20 51 26 1		4 56 54 80				70 51 34 32		
25 20 51 26 1		5 5 47 88				70 30 41 94		
26 20 51 30 5		5 9 48 97				70 30 42 15		
28 20 51 43 7		5 17 55 18				70 16 3 20		
29 20 51 53 6		5 22 1 80				70 9 7 21		
A g 2 20 52 54 1		5 38 48 48				69 44 36 84		
5 20 53 57 7		5 51 42 02				69 29 51 38		
7 20 54 50 0		6 0 26 75				69 21 58 93		
9 20 55 46 5		6 9 17 28				69 15 44 65		
13 20 57 57 7		6 27 1 11				69 8 32 48		
14 20 58 33 8		6 31 47 94				69 7 54 53		
15 20 59 10 6		6 36 20 56				69 7 43 82		
Sept 10 21 18 51 8		8 38 36 88				72 4 29 07		
11 21 19 39 8		8 43 20 68				72 19 2 18		
N v 27 22 12 20 6		14 39 44 99				103 58 48 68		
Dec 2 22 17 13 8		15 4 21 49				10 51 49 3		
9 22 24 53 0		15 39 37 99				108 19 53 89		
11 22 27 15 2		15 49 53 52				106 57 5 93		
13 22 28 43 1		16 0 13 78				109 32 11 51		
17 22 34 51 1		16 21 7 64						
18 22 36 7 8		16 26 24 07				110 50 11 47		
25 22 45 51 2		17 3 44 45				112 14 0 19		
26 22 47 15 6		17 9 7 85				112 25 23 61		
30 22 50 24 9		17 30 47 82				112 56 7 28		
1834								
Ja 16 23 19 3 3	C	19 3 46 49	46 05	-0 44		112 59 18 21	17 10	- 1 11
17 23 20 34 6		19 9 12 79	12 41	-0 38		112 53 5 06	3 41	- 1 6
19 23 23 31 5		19 20 4 42	3 68	-0 74		112 38 29 94	29 10	- 0 81
21 23 26 26 0		19 30 52 77	52 31	-0 46		112 21 8 81	8 28	- 0
24 23 30 42 6		19 46 59 76	59 42	-0 31		111 50 0 18	0 89	+ 0 71
26 23 33 29 6		19 57 40 29	39 80	-0 49		111 25 57 98	57 07	- 0 91
27 23 34 51 5		20 2 58 92	58 54	-0 38		111 12 57 26	56 94	0 32
29 23 37 34 1		20 13 33 59	33 04	-0 55		110 44 2 69	2 5	- 0 14
F b 2 23 42 41 2		20 34 29 38	29 17	-0 21		109 41 84	54 9	- 0 89
6 23 47 31 9		20 55 7 48	6 93	-0 55		108 29 34 41	33 88	- 0 53
10 23 52 2 9		21 15 25 50	25 38	-0 12		107 8 46 97	42 85	- 4 12

RIGHT ASCENSION AND NORTH POLAR DISTANCES OF THE CENTER OF VENUS (Continued)

M S l T m f	P tOb	A R f m	A R from	Err f N A	P int Ob	N P D f m	N P D	Err f N A
Ob	d	Ob	N A		d	Ob	f m N A	
1834								
I b 11 23 53 81	C	21 20 27 42	26 91	— 0 51	C	106 47 17 46	15 57	— 1 89
14 23 6 116		21 35 24 02	24 21	+ 0 19		104 40 5 97	8 26	+ 2 29
17 23 59 107		21 50 10 26	10 64	+ 0 38		104 29 6 89	6 45	— 0 44
18 0 0 81		21 55 3 65	3 78	+ 0 13		104 4 36 77	37 41	+ 0 64
19 0 1 14		21 59 55 65	5 77	+ 0 12		103 39 44 71	45 48	+ 0 77
23 0 3 40 9		22 14 4 99	25 23	+ 0 24		102 23 0 26	59 56	— 0 70
21 0 4 34 4		22 19 12 57	12 77	+ 0 20				
183								
F l 3 21 11 28	I	18 6 8 13	7 43	— 0 70		108 20 30 55	36 54	+ 5 99
4 21 10 52 8		18 9 8 29	7 47	— 0 82		108 24 7 39	12 83	+ 5 44
5 21 9 57 7		18 12 12 92	12 02	— 0 90		108 27 38 45	42 57	+ 4 12
J 21 7 12 0		18 2 12 22	12 14	— 0 78		108 40 4 12	8 88	+ 4 76
10 21 6 40 3		18 28 37 54	36 89	— 0 65		108 42 42 78	45 79	+ 3 01
12 21 5 17 8		18 3 37 78	37 02	— 0 76		108 47 12 14	15 07	+ 2 93
13 21 26 3		18 33 13 04	12 15	— 0 89		108 49 1 43	5 50	+ 4 07
20 21 4 18 9		19 5 41 19	40 35	— 0 84		108 52 47 43	52 74	+ 5 31
23 21 4 25 8		19 17 38 78	38 32	— 0 46		108 48 46 40	51 17	+ 4 77
21 21 4 33 2		19 21 42 35	41 72	— 0 63		108 46 36 69	40 48	+ 3 79
M 10 21 8 41 3		20 21 3 53	2 83	— 0 70		107 28 4 32	5 89	+ 1 57
23 21 14 45 5		21 18 23 18	22 54	— 0 64		104 51 7 38	9 58	+ 2 20
Ap l 9 21 29 46 7	C	2 33 28 23	27 29	— 0 94		99 35 49 39	49 22	— 0 17
20 21 29 46 3		23 47 30 23	29 45	— 0 78		92 51 8 64	7 71	— 0 93
30 21 31 20 9		0 4 50 31	49 71	— 0 60		91 8 2 37	4 84	+ 2 47
May 1 21 31 43		0 9 10 86	9 81	— 1 05		90 42 1 46	2 90	+ 1 44
3 21 32 31 0		0 17 1 06	50 19	— 0 87		89 49 43 87	43 81	— 0 06
4 21 32 53 9		0 22 10 88	10 56	— 0 32		89 23 27 27	28 14	+ 0 87
6 21 33 4 0		0 30 52 30	51 76	— 0 54		88 30 48 10	47 54	— 0 56
7 21 34 6 7		0 35 13 08	12 64	— 0 44		88 4 23 85	23 81	— 0 04
8 21 34 30 6		0 39 34 61	33 75	— 0 86		87 37 57 45	58 75	+ 1 30
10 21 3 21 5		0 48 17 53	16 87	— 0 66		86 45 6 15	6 98	+ 0 83
11 21 3 46 0		0 57 39 12	38 91	— 0 21		86 18 42 21	41 44	— 0 77
14 21 3 43		1 5 47 51	47 34	— 0 17		84 59 36 26	34 21	— 2 05
1 21 37 32 3		1 10 11 41	11 06	— 0 3		84 33 17 11	17 09	— 0 02
17 21 38 27 8		1 19 0 14	59 97	— 0 17		83 40 57 01	54 84	— 2 17
19 21 39 25 5		1 27 51 70	51 05	— 0 65		82 48 53 09	52 77	— 0 32
20 21 39 55 6		1 32 18 31	17 54	— 0 77		82 23 0 64	0 90	+ 0 26
21 21 40 25 5		1 30 45 44	44 65	— 0 79		81 57 17 89	16 22	— 1 67
22 21 40 56 9		1 41 13 30	12 40	— 0 90		81 31 41 88	39 40	— 2 48
24 21 42 1 6		1 50 10 64	10 03	— 0 61		80 40 57 30	51 88	— 5 42
25 21 42		1 51	39 88			80 15 44 60	42 85	— 1 75
26 21 43 8 4		1 59 10 87	10 61	— 0 26		79 50 48 35	44 39	— 3 96
27 21 43 43 1		2 3 42 52	42 07	— 0 45		79 26 0 27	57 20	— 3 07
28 21 44 19 2		2 8 15 08	14 37	— 0 71		79 1 25 16	22 00	— 3 16
J ne 7 21 51 6 1		2 51 27 53	27 28	— 0 25		75 9 4 95	4 86	— 0 09
8 21 51 51 3		2 59 10 43	10 08	— 0 35		74 47 28 11	27 85	— 0 26
18 22 0 33 4		3 47 19 60	19 17	— 0 43		71 31 50 24	49 90	— 0 34
19 22 1 32 1		3 52 14 67	14 33	— 0 34		71 14 34 97	34 17	— 0 80
28 22 11 6 2		4 37 19 97	20 17	+ 0 20		69 1 26 88	24 98	— 1 90
29 22 12 15 8		4 42 25 79	25 99	+ 0 20		68 49 16 45	16 50	+ 0 05
30 22 13 25 8		4 47 32 52	32 75	+ 0 23		68 37 44 28	42 03	— 2 25
J ly 1 22 14 36 8		4 52 40 15	40 43	+ 0 28		68 26 45 46	42 14	— 3 32
2 22 15 48 7		4 57 48 80	49 01	+ 0 21		68 16 19 59	17 09	— 2 50
3 22 17 1 2		5 2 58 37	58 45	+ 0 08		68 6 30 69	27 51	— 3 18
24 22 44 33 4		6 53 22 90	23 07	+ 0 17		67 7 16 02	15 27	— 0 75

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF VENUS (Continued)

M	S	lar	T	m	f	P	tOb	A	R	f	m	A	R	f	m	Err	f	N	A	P	tOb	N	I	D	f	m	N	P	D	f	m	E	f	N	A
Ob	ti					ed		Ob	ti			N	A							d		Ob	ti			N	A								
1835																																			
J ly	26	22	47	14	6	C		7	3	57	24	57	52			+ 028				C		67	16	53	25	53	18						—	007	
	31	22	53	50				7	30			17	61									67	52	35	22	34	66						—	056	
Aug	6	23	1	28	3			8	1	36	00	35	78			— 022						68	56	44	30	43	57						—	073	
	19	23	16	25	7			9	7	45	14	44	96			— 018						72	28	55	22	58	50						+	358	
Sept	2	23	29	17	6			10	15	56	74	56	38			— 036						77	50	15	50	17	25						+	175	
	6	23	32	26	6			10	34	52	49	52	09			— 040						79	35	38	32	37	59						—	073	
	7	23	33	11	7			10	39	34	11	33	94			— 017						80	2	40	71	42	37						+	166	
Oct	15	23	58	19	3			13	34	34	50	33	72			— 078						98	46	6	49	4	45						—	204	
	16	23	59	3	5			13	39	15	42	14	75			— 067						99	14	56	70	53	29						—	341	
	19	0	0	34	4			13	48	39	80	39	15			— 065						100	11	54	09	53	20						—	089	
	20	0	1	21	4			13	53	23	45	22	58			— 087						100	40	3	31	2	58						—	073	
	23	0	3	47	2			14	7	39	17	38	37			— 080						102	3	0	26	58	63						—	163	
	24	0	4	37	6			14	12	26	32	25	53			— 079						102	30	3	91	3	86						—	005	
N v	6	0	17	12	5			15	16	19	02	18	57			— 045						107	49	51	40	51	82						+	042	
	7	0	18	19	1			15	21	22	35	21	75			— 060						108	11	32	24	30	56						—	168	
	8	0	19	27	0			15	26	27	02	26	20			— 082						108	32	41	39	40	04						—	135	
	9	0	20	35	8			15	31	32	34	31	89			— 045						108	53	18	47	19	40						+	093	
	22	0	37	22	2			15	39	36	47	36	05			— 042						112	30	40	36	40	18						—	018	
	23	0	38	47	3			15	44	58	37	57	96			— 041						112	43	3	94	2	83						—	111	
	28	0	46	6	1			17	12	0	61	0	68			+ 007						113	34	40	48	39	45						—	103	
Dec	15	1	12	20	9			18	45	21	55	21	46			— 009						114	13	35	07	34	40						—	067	
	19	1	18	27	3			19	7	15	49	15	12			— 037						113	51	16	72	14	05						—	267	
	20	1	19	57	5			19	12	42	33	42	11			— 022						113	43	50	07	48	34						—	173	
	21	1	21	26	9			19	18	9	07	8	36			— 071						113	36	40	03	39	01						—	102	
	22	1	22	55	7			19	23	34	13	33	89			— 024						113	26	51	78	46	24						—	51	
	23	1	24	23	5			19	28	58	72	58	56			— 016						113	17	14	66	10	65						—	401	
	24	1	25	50	6			19	34	22	68	22	37			— 031						113	6	55	81	52	64						—	317	
	26	1	28	41	8			19	45	7	77	7	14			— 063						112	44	11	91	10	79						—	112	
	30	1	31	11	4			20	6	24	34	24	03			— 031						111	50	40	21	37	78						—	243	
1836																																			
Jan	4	1	40	36	9			20	32	33	75	33	43			— 032						110	29	15	8	14	02						—	183	
	7	1	44	12	6			20	47	59	41	59	52			+ 011						109	33	15	36	12	27						—	309	
	8	1	45	22	0			20	53	5	58	5	54			— 004						109	13	28	11	23	92						—	419	
	16	1	53	47	2			21	33	5	09	4	94			— 015						106	16	22	64	21	32						—	132	
	19	1	56	34	6			21	47	42	64	42	52			— 012						105	2	21	17	17	56						—	361	
	20	1	57	27	6			21	52	32	27	32	41			+ 014						104	36	49	86	46	93						—	293	
	21	1	58	20	0			21	57	21	48	21	06			— 042						104	10	53	16	52	94						—	022	
	22	1	59	9	9			22	2	7	82	8	40			+ 058						103	44	37	65	36	27						—	138	
	23	1	59	59	7			22	6	54	39	54	52			+ 013						103	18	2	04	57	83						—	421	
	25	2	1	35	1			22	16	23	00	23	01			+ 001						102	23	41	08	39	25						—	183	
	26	2	2	20	9			22	21	5	49	5	59			+ 010						101	56	2	41	0	41						—	200	
	28	2	3	49	4			22	30	27	20	27	13			— 007						100	59	49	30	47	91						—	139	
	29	2	4	31	5			22	35	6	25	6	27			+ 002						100	31	17	51	15	90						—	161	
F b	2	2	7	10	3			22	53	32	57	32	53			— 004						98	34	35	51	34	57						—	094	
	3	2	7	48	2			22	58	6	26	6	56			+ 030						98	4	50	3	49	63						—	072	
	4	2	8	25	0			23	2	39	89	39	86			— 003						97	34	52	44	52	46						+	002	
	5	2	9	0	5			23	7	12	25	12	21			— 004						97	4	45	17	43	80						—	137	
	6	2	9	35	5			23	11	43	88	43	81			— 007						96	34	27	71	24	42						—	329	
	8	2	10	43	1			23	20	44	61	44	69			+ 008						95	33	19	64	16	44						—	320	
	9	2	11	15	9			23	25	14	25	14	10			— 015						95	2	33	45	29	31						—	414	
July	31	23	20	5	7	2 L		7	59	34	83	35	30			+ 047						76	36	15	81	17	99						+	218	

RIGHT ASCENSIONS AND NORTH POLAR DISTANCE OF 1 CENTER FALGUS (C n l d)

M	S	T	m	P	A	A	E	I	N	N	L
Ob	t			rv	Ob	N	f	Ob	O	f	tr
				d	tl	A	N	d	I	N	A
1836			m								
S	9	21	5 27 8	2 L	8 22 1 69	15 73	+ 004	C	74 48 21 35	13 18	- 8 17
	12	21	2 36 4		8 31 14 72	14 8	+ 013		71 54 33 03	26 76	- 6 27
	20	20	57 33 9		8 57 41 39	44 10	- 029		75 38 42 86	36 71	- 6 1
O	3	20	54 0 7		9 46 16 22	16 17	- 005		77 52 17 36	42 22	- 5 11
N	2	21	9 40 0		13 30 17	5 05	- 042		97 13 30 8	35 74	- 0 08
D	1	21	13 12 8		13 57 17 26	16 66	- 060		99 41 1 18	2 95	+ 1 17
	5	21	15 51 8		14 1 41 15	43 61	- 051		101 22 40 01	0 38	+ 0 41
	6	21	16 33 7		14 20 23 38	22 98	- 010		101 16 49 42	50 32	+ 0 30
	19	21	27 29 1		15 22 36 33	35 98	- 035		106 33 38 7	38 25	- 0 50
1837											
J	2	21	43 0 4	C	16 33 20 37	20 01	- 036		110 27 10 37	13 36	+ 2 39
	19	22	5 59 5		18 3 93	2 19	- 074		112 41 20 57	30 61	+ 4 07
Γ	3	22	27 24 0		19 24 2 33	1 81	- 049		111 9 14 71	49 74	+ 0 3
	5	22	30 9 4		19 31 41 47	10 93	- 054		111 42 39 4	42 0	+ 4 11
	6	22	31 32 0		19 39 9 78	9 49	- 029		111 33 7 3	11 87	+ 4 2
	7	22	32 51 8		19 40 17 64	17 28	- 036		111 22 55 98	1 7	+ 77
	8	22	4 13 1		19 50 34 46	31 32	- 014		111 12 7 13	13 12	+ 30
	9	22	35 32 3		19 50 50 99	50 50	- 043		111 0 42 35	46 9	+ 121
	10	22	36 51 7		20 1 6 34	94	- 040		110 18 10 68	42 47	+ 1 1
	17	22	45 33 9		20 37 28 03	27 18	- 080		109 7 21 20	2 01	+ 3 81
	19	22	47 56 0		20 47 41 74	11 3	- 051		108 33 17 27	20 71	+ 3 11
	20	22	49 3 5		20 52 46 87	46 60	- 027		108 1 26 8	30 1	+ 3 33
	26	22	55 32 7		21 22 55 79	55 76	- 003		106 17 11 20	48 80	+ 4 60
M	1	22	8 30 1		21 37 45 51	4 40	- 011		100 12 33 05	38 00	+ 0 4
	5	23	2 16 2		21 57 16 83	16 30	- 033		103 30 48 98	52 11	+ 3 16
	7	23	4 2 5		2 0 55 58	5 37	- 021		102 51 7 11	11 76	+ 4 3
	8	23	4 55 1		22 11 43 45	43 35	- 010		102 26 16 04	19 70	+ 3 06
	9	23	44 2		22 16 30 73	30 38	- 035		102 1 5 46	7 00	+ 2 14
	10	23	6 32 7		22 21 16 90	16 41	- 049		101 3 32 27	30 38	+ 3 71
	13	23	8 54 4		22 35 29 07	28 8	- 022		100 17 8 09	11 79	+ 3 70
	10	23	10 21 7		22 44 53 00	52 73	- 027		99 23 30 87	32 13	+ 1 26
	16	23	11 10 1		22 49 33 56	33 44	- 012		98 6 19 08	19 11	+ 0 03
	19	23	13 17 8		23 3 31 62	30 98	- 064		97 33 1 40	17 4	+ 2 14
	20	23	13 58 9		3 8 8 96	8 1	- 022		97 3 11 36	11 61	+ 0 2
	21	23	14 40 0		23 12 46 22	45 89	- 033		96 36 5 32	54 30	- 1 02
	22	23	15 18 3		23 17 22 43	22 42	- 001		96 8 26 29	26 28	- 0 01
	23	23	15 57 7		23 21 58 49	58 36	- 013		95 39 18 28	48 10	- 0 18
	24	23	16 36 9		23 26 33 67	33 80	+ 013		95 11 1 29	0 61	- 0 68
	26	23	17 54 5		23 35 43 67	43 26	- 041		94 13 2 36	0 18	- 2 18
	27	23	18 29 4		23 40 17 09	17 35	+ 0 26		93 43 0 90	48 83	- 2 07
	28	23	19 6 7		23 44 50 82	51 07	+ 0 25		93 14 31 58	30 88	- 0 70
	29	23	19 44 9		23 40 24 55	24 48	- 0 07		92 45 8 41	7 08	- 1 33
	30	23	20 20		23 53 57 48	57 56	+ 0 08		92 15 39 80	38 21	- 1 59
A ₁	1	23	21 32 6		0 3 3 08	3 05	- 0 03		91 16 28 13	28 00	- 0 13
	7	23	25 6 7		0 30 16 31	16 48	+ 0 17		91 18 11 33	10 48	- 0 85
	11	23	27 29 3		0 48 25 72	26 09	+ 0 37		86 19 41 39	37 29	- 4 10
	12	23	28 6 2		0 52 59 10	58 96	- 0 14		85 50 11 84	7 86	- 3 98
	13	23	28 41 6		0 57 32 25	32 06	- 0 19		85 20 45 35	43 0	- 1 85
	14	23	29 18 5		1 2 5 36	5 47	+ 0 11		84 51 27 42	24 77	- 2 65
	17	23	31 11 8		1 15 48 06	47 97	- 0 09		83 24 13 11	9 80	- 3 29
	19	23	32 29 0		1 24 58 45	38 53	+ 0 08		82 26 43 76	41 41	- 2 35
	20	23	33 7 6		1 29 34 25	34 62	+ 0 37		81 58 16 78	11 73	- 5 05
	21	23	33 47 8		1 34 10 61	11 30	+ 0 69		81 29 59 41	52 66	- 6 75

[illegible]

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF VENUS (Continued)

M an S i T i m f				P i n t O b d.	A R f m		A R f r m N A.	Err f N A	P i n t O b r v d	N P D f r m		N P D f r m N A	Err f N A	
O b r v t i					O b					O b r v i				
1838						m								
Feb	10	2	3	39	1 L	23 23	1 64	0 91	— 0 73	C	87 53	19 82	4 83	— 14 99
	11	1	59	10		23 22	54 18	53 95	— 0 23		87 40	24 73	8 65	— 16 08
	15	1	41	22 0		23 20	58 50	58 24	— 0 26		86 59	12 63	58 20	— 14 43
	17	1	31	39 6		23 20	8 38	7 73	— 0 65		86 45	25 62	16 83	— 8 79
	22	1	5	0 3		23 12	7 39	7 16	— 0 23		86 33	46 29	28 32	— 17 97
	24	0	53	29 8		23 8	27 87	27 96	+ 0 09		86 38	17 57	10 47	— 7 10
	25	0	47	35 8		23 6	29 32	29 36	+ 0 04		86 42	38 80	33 74	— 5 06
	26	0	41	36 2		23 4	25 65	25 57	— 0 08		86 48	23 88	17 53	— 6 35
	27	0	35	32 3		23 2	17 36	17 32	— 0 04		86 55	31 55	20 15	— 11 40
	28	0	29	24 7	23 0		6 19		87 3	47 96	39 63	— 8 33		
M	4	0	4	34 7	2 L	22 50	57 10	57 08	— 0 02		87 48	52 50	40 27	— 12 23
	13	23	5	16 2		22 30	49 83	49 76	— 0 07		90 32	29 64	31 95	+ 2 31
	14	22	59	52 9		22 29	22 88	23 34	+ 0 46		90 49	58 52	1 76	+ 3 24
	15	22	54	38 8		22 28	5 19	5 34	+ 0 15		91 7	16 38	20 01	+ 3 63
	19	22	35	13 6		22 24	22 89	23 73	+ 0 84		92 12	43 87	49 89	+ 6 02
	26	22	7	14 5		22 23	54 92	55 24	+ 0 32		93 43	55 09	0 73	+ 5 64
Ap l	23	21	12	35 1	C	23 19	30 79	30 81	+ 0 02		93 25	47 23	1 33	+ 14 10
	24	21	11	42 2		23 22	34 98	34 13	— 0 85		93 15	9 32	21 21	+ 11 89
S p t	27	22	38	16 2		11 4	26 84	26 95	+ 0 11		82 35	22 43	21 91	— 0 52
	28	22	38	58 2		11 9	4 82	4 62	— 0 20		83 3	10 03	8 01	— 2 02
	29	22	39	38 8		11 13	41 96	41 79	— 0 17		83 31	5 49	6 57	+ 1 08
O t	4	22	42	56 3		11 36	41 91	42 05	+ 0 14		85 53	43 54	43 76	+ 0 22
	9	22	46	7 1		11 9	36 55	36 33	— 0 52		82 19	43 47	50 29	+ 6 82
1839														
J	2	0	19	37 5		19 4	33 78	32 84	— 0 94		113 27	12 49	15 76	+ 3 27
	5	0	24	9 2		19 20	5 91	54 87	— 1 04		113 4	52 49	54 15	+ 1 66
	7	0	27	6 7		19 31	46 82	46 09	— 0 3		112 46	22 94	26 07	+ 3 13
	8	0	28	40 7		19 37	11 35	10 48	— 0 87		112 36	6 25	9 05	+ 2 80
	14	0	36	58 8		20 9	17 51	17 10	— 0 41		111 20	13 97	14 72	+ 0 75
	16	0	39	40 0		20 19	51 44	50 84	— 0 60		110 49	42 55	44 57	+ 2 02
	17	0	40	58 3		20 25	6 48	5 98	— 0 50		110 33	29 95	33 48	+ 3 53
	18	0	42	15 3		20 30	20 14	19 82	— 0 32		110 16	41 15	46 20	+ 5 05
	22	0	47	11 3		20 51	3 52	2 95	— 0 57		109 3	47 58	47 40	— 0 18
	23	0	48	22 2		20 56	11 06	10 54	— 0 52		108 44	6 60	8 57	+ 1 97
	29	0	55	0 0		21 26	29 07	28 94	— 0 13		106 35	27 42	28 70	+ 1 28
Feb	4	1	0	52 1		21 56	1 69	1 32	— 0 37		104 10	10 69	14 69	+ 4 00
	11	1	6	49 5		22 29	35 90	35 86	— 0 04		101 3	29 48	31 97	+ 2 49
	12	1	7	36 8		22 35	19 46	19 37	— 0 09		100 35	35 49	35 42	— 0 07
	13	1	8	22 8		22 39	2 06	1 93	— 0 13		100 7	20 42	21 68	+ 1 26
	14	1	9	7 7		22 43	43 59	43 62	+ 0 03		99 38	51 84	52 13	+ 0 29
	15	1	9	51 7		22 48	24 42	24 30	— 0 12		99 10	6 78	7 75	+ 0 97
	16	1	10	34 8		22 53	4 22	4 12	— 0 10		98 41	7 03	9 97	+ 2 94
	17	1	11	17 0		22 57	42 98	43 08	+ 0 10		98 11	54 05	56 36	+ 2 31
	18	1	11	58 6		23 2	21 47	21 24	— 0 23		97 42	30 06	31 02	+ 0 96
	19	1	12	39 1		23 6	58 52	58 61	+ 0 09		97 12	54 97	54 59	— 0 38
	21	1	13	58 2		23 16	11 47	11 22	— 0 25		96 13	11 23	5 93	— 5 30
	22	1	14	36 9		23 20	46 17	46 53	+ 0 36		95 42	59 18	56 99	— 2 19
	24	1	15	52 2		23 29	55 40	55 20	— 0 20		94 42	19 15	14 48	— 4 67
	25	1	16	29 0		23 34	28 45	28 73	+ 0 28		94 11	42 61	40 93	— 1 68
	27	1	17	41 1		23 43	34 57	34 26	— 0 31		93 10	17 47	14 89	— 2 58
	28	1	18	16 6		23 48	6 29	6 42	+ 0 13		92 39	25 70	23 83	— 1 87
M	1	1	18	51 9		23 52	38 19	38 16	— 0 03		92 8	33 63	28 44	— 5 19
	2	1	19	26 7		23 57	9 94	9 59	— 0 35		91 37	32 04	31 46	— 0 58

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF VENUS (*Continued*)

M ans lar Tim f Obs rv d	P int Ob ed	A R fr m Ob rv l	A R fr m N A.	Err f N A	P m Ob rv d	N P D f m Ob t n.	N P D fr m N A	E f N A
1839		m						
Mar 22 1 32 04	C	1 27 36 42	36 46	+ 0 04	C	81 23 26 40	23 35	— 3 05
25 1 32 55 3		1 41 21 47	21 37	— 0 10		79 55 41 56	37 07	— 4 49
26 1 33 34 9		1 45 57 49	57 54	+ 0 05		79 26 53 47	48 77	— 4 70
27 1 34 15 4		1 50 34 62	34 29	— 0 33		78 58 18 31	15 23	— 3 08
28 1 34 55 8		1 55 11 71	11 95	+ 0 24		78 30 1 03	59 55	— 1 48
29 1 35 37 7		1 59 50 18	50 21	+ 0 03		78 1 58 54	56 64	— 2 90
30 1 36 20 0		2 4 29 20	29 26	+ 0 06		77 34 15 05	10 87	— 4 18
April 15 1 49 42 7		3 20 58 93	58 81	— 0 12		70 58 44 59	41 04	— 3 55
16 1 50 41 4		3 25 54 29	54 15	— 0 14		70 37 40 82	37 13	— 3 69
17 1 51 39 8		3 30 50 70	50 61	— 0 09		70 17 6 11	3 30	— 2 81
19 1 53 43 6		3 40 46 62	46 63	+ 0 01		69 37 31 36	28 89	— 2 47
20 1 54 46 3		3 45 46 05	46 18	+ 0 13		69 18 31 78	32 32	+ 0 4
25 2 0 14 5		4 10 57 83	58 14	+ 0 31		67 51 0 95	57 89	— 3 06
26 2 1 22 9		4 16 3 30	3 30	0 00		67 36 24 38	25 03	+ 0 65
27 2 2 31 9		4 21 8 89	9 27	+ 0 38		67 21 30 18	28 53	— 1 65
S pt 23 0 50 15 6	1 L	12 56 9 50	8 36	— 1 14	N	104 48 7 29	47 40 57	— 26 72
26 0 33 57 0		12 51 37 92	37 07	— 0 85	O	104 3 39 13	22 00	— 17 13
27 0 28 18 2		12 49 54 81	53 80	— 1 01		104 21 59 42	38 39	— 21 03
30 0 11 1 8		12 44 15 26	13 71	— 1 55		104 47 2 85	48 81	— 14 04
Oct 4 23 40 49 9		12 33 50 81	49 75	— 1 06				
6 23 28 51 7	2 L	12 29 39 79	39 17	— 0 62		101 42 29 87	12 79	— 17 08
8 23 16 59 5		12 25 39 31	38 13	— 1 18		100 59 3 73	58 42 23	— 21 50
1840								
Aug 14 0 27 55 9	C	9 59 1 03	1 27	+ 0 24		76 10 55 86	56 78	+ 0 92
Sept 7 0 44 28		11 50	13 21			87 32 24 13	26 39	+ 2 26
14 0 48 28		12 21	49 96			91 7 33 32	35 92	+ 2 60
17 0 50 11		12 35	22 92			92 40 0 01	1 41	+ 1 40
22 0 53 8		12 58	2 65			95 13 7 48	8 78	+ 1 30
Oct 8 1 4 6 0		14 12 7 82	7 37	— 0 45		102 58 21 40	24 49	+ 3 09
10 1 5 43 4		14 21 38 91	37 98	— 0 93		103 52 4 57	8 14	+ 3 57
17 1 11 58 1		14 55 30 70	29 83	— 0 87		106 47 58 19	1 65	+ 3 46
19 1 13 56 1		15 5 21 93	20 99	— 0 94		107 35 55 51	56 96	+ 1 4
20 1 14 56 6		15 10 19 18	18 37	— 0 81		107 58 42 90	44 35	+ 1 45
Dec 4 2 16 1 1		19 8 58 80	58 43	— 0 37		104 22 32 53	34 97	+ 2 14
1841								
Jan 4 2 50 7 8		21 45 24 71	24 18	— 0 53		105 21 3 85	58 38	— 47
6 2 51 31 6		21 54 41 63	41 00	— 0 63		104 29 17 53	13 49	— 4 04
23 2 59 36 7		23 9 50 37	50 02	— 0 35		96 22 1 58	55 45	— 6 13
30 3 1 17 8		23 39 6 65	6 71	+ 0 06		92 46 5 73	56 24	— 9 49
Feb 1 3 1 38 0		23 47 20 42	19 94	— 0 48		91 43 45 25	35 08	— 10 17
4 3 2 1 5		23 59 33 23	33 08	— 0 15		90 10 1 35	53 09	— 8 26
5 3 2 7 4		0 3 35 70	35 74	+ 0 04		89 38 47 04	39 31	— 7 73
16 3 2 24 3		0 47	15 66			83 58 58 96	52 92	— 6 04
Mar 26 2 49		3 4	1 78			68 3 38 83	41 58	+ 2 75
April 21 1 58 4 9		3 55 5 69	7 37	+ 1 68		63 43 21 54	24 74	+ 3 20
24 1 46 45 8		3 55 34 45	36 33	+ 1 88		63 44 57 44	1 58	+ 4 14
May 26 22 51 31 4		2 59 43 87	45 76	+ 1 89		72 41 4 59	13 22	+ 8 63
June 10 21 41 2 6		2 58 24 65	25 20	+ 0 55		75 32 14 54	25 60	+ 11 06

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF VENUS (*C t ued*)

M S l Tim f	l in Ob	A R fr m	A R from	E f N A	l i Ob	N P D fr m	N P D	E f N A
Ob tl	d	Ob t	N A		d	Ob l	f m N A	
1841								
J e 15 21 27 44 1	C	3 4 45 02	45 90	+ 0 88	C	75 39 32 88	47 47	+ 14 59
16 21 25 24 9		3 6 20 52	21 01	+ 0 49		75 38 41 79	48 51	+ 6 72
J ly 14 20 52 39 7		4 23 48 51	48 39	— 0 12		72 11 23 65	22 25	— 1 40
1842								
M 28 0 28 8 8		0 49 18 52	18 54	+ 0 02				
30 0 29 22 0		0 58 24 82	25 09	+ 0 27		84 58 15 54	12 61	— 2 90
Ap l 2 0 31 14		1 12				83 28 39 22	3 50	— 3 72
4 0 32 31		1 21				82 29 36 79	32 62	— 4 17
7 0 34 31 1		1 35 7 21	7 49	+ 0 28		81 2 18 04	15 25	— 2 79
9 0 3 49 9		1 44 23 38	23 70	+ 0 32				
M y 2 0 36 2 7		3 35 16 78	16 75	— 0 03		70 38 56 85	51 75	— 5 10
11 1 6 28 8		4 21 13 29	13 88	+ 0 59		68 3 9 73	5 19	— 4 54
26 1 26 29 7		5 40 25 63	26 17	+ 0 54		65 36 9 34	9 75	+ 0 41
1843								
Ja 19 21 30 19 8	2 L	17 25 52 70	51 42	— 1 28		107 36 4 20	39 27	— 3 93
22 21 24 13 3		17 31 34 72	33 43	— 1 29		107 45 6 93	2 59	— 4 34
F b 9 21 5 11		18 23 27 97	28 34	+ 0 37		108 51 17 87	21 28	+ 3 41
12 21 4 12 2		18 34 18 16	17 40	— 0 6				
13 21 3 58 2		18 38 1 13	0 31	— 0 82		108 59 54 62	5 06	+ 10 44
14 21 3 47 4		18 41 46 86	46 14	— 0 72		109 1 23 14	31 28	+ 8 14
1 21 3 39 3		18 45 35 27	34 83	— 0 44		109 2 28 53	37 38	+ 8 8
16 21 3 34 2		18 49 26 82	26 13	— 0 69		109 3 1 43	22 87	+ 7 41
17 21 3 31 7		18 53 20 72	20 01	— 0 71		109 3 36 07	46 61	+ 10 57
19 21 3 33 7		19 1 15 80	14 97	— 0 83		109 3 16 75	26 01	+ 9 26
20 21 3 37 5		19 5 16 46	15 86	— 0 60		109 2 33 24	40 30	+ 7 06
22 21 3 52 2		19 13 24 56	23 84	— 0 72		108 59 47 19	54 59	+ 7 10
23 21 4 2 6		19 17 31 37	30 72	— 0 65		108 57 43 63	53 50	+ 9 87
26 21 4 41 0		19 30 2 40	1 70	— 0 70		108 49 2 55	11 31	+ 8 76
27 21 5 0 9		19 34 15 72	15 13	— 0 59		108 45 13 37	22 84	+ 9 47
28 21 5 18 9		19 38 30 58	29 99	— 0 59		108 40 5 29	6 98	+ 9 69
Mar 1 21 5 38 7		19 42 46 81	46 14	— 0 67		108 36 10 02	22 36	+ 12 34
2 21 5 59 1		19 47 4 04	3 49	— 0 55		108 30 59 80	9 72	+ 9 92
3 21 6 21 4		19 51 22 66	21 97	— 0 69		108 25 19 79	28 56	+ 8 77
5 21 7 8 2		20 0 2 66	2 01	— 0 65		108 12 31 44	40 00	+ 8 56
6 21 7 32 9		20 5 24 04	23 43	— 0 61		108 5 21 03	32 11	+ 11 08
8 21 8 24 9		20 13 9 26	8 68	— 0 58		107 49 40 07	48 75	+ 8 68
16 21 12 18 5		20 48 33 24	32 71	— 0 53		106 27 15 80	24 91	+ 9 11
19 21 13 48 6		21 1 55 70	55 01	— 0 69		105 48 22 89	33 92	+ 11 03
Ap l 4 21 21 55		22 13				101 14 27 40	37 05	+ 9 65
5 21 22 23		22 17				100 54 1 62	10 44	+ 8 82
6 21 22 52 2		22 21 59 74	59 00	— 0 74		100 33 11 63	23 69	+ 12 06
7 21 23 20 0		22 26 23 99	23 67	— 0 32		100 12 3 58	15 98	+ 12 40
9 21 24 15 6						99 28 56 23	4 07	+ 7 84
11 21 25 8 6		22 43 59 70	59 39	— 0 31		98 44 28 36	38 67	+ 10 31
12 21 25 35 9		22 48 22 95	22 59	— 0 36		98 21 49 30	59 04	+ 9 74
S pt 1 23 30 49 4	C	10 13 50 40	50 20	— 0 20		77 38 44 95	45 22	+ 0 27
N v 20 0 37 12 0		16 31 49 23	48 59	— 0 73		112 12 15 15	19 10	+ 3 95
24 0 42 51 4		16 53 16 34	1 95	— 0 39		113 1 37 07	40 43	+ 3 36
28 0 48 46 0		17 14 57 43	57 31	— 0 12		113 39 59 07	63 09	+ 4 02
De 9 1 5 42 8		18 15 19 26	18 78	— 0 48		114 25 28 76	32 70	+ 3 94

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF VENUS (*C i u d*)

M	So	Tim	f	P	IntOb	A R f m	A R f m	Err	f N A	P i Ob	N P D fr m	N P D	E	f N A
Ob					ed	Ob	ti		N A	rv d	Ob	rv ti	rom	N A
1843														
D	10	1	7	160	C	18 20 49 32	49 15	—0 17		C	114 25 7 87	11 24	+ 3 37	
	13	1	11	560		18 37 19 77	19 45	—0 32			114 19 32 11	34 50	+ 2 39	
	14	1	13	287		18 42 49 44	49 04	—0 40			114 16 9 14	11 68	+ 2 54	
	18	1	19	355		19 4 44 11	43 25	—0 86			113 55 9 63	11 8	+ 2 22	
	19	1	21	63		19 10 11 27	10 47	—0 80			113 48 3 10	5 89	+ 2 79	
	23	1	27	03		19 31 52 75	51 86	—0 89			113 12 27 31	27 18	— 0 13	
1844														
J	2	1	40	362		20 24 56 51	56 06	—0 45			110 55 16 93	17 13	+ 0 20	
	3	1	41	526		20 30 8 19	7 90	—0 29			110 38 0 78	2 92	+ 2 14	
			1 44	177		20 40 28 31	27 70	—0 61						
	6	1	45	304		20 45 35 89	35 55	—0 34			109 42 48 20	47 89	— 0 31	
	7	1	46	385		20 50 42 21	42 09	—0 12			109 23 9 61	14 60	+ 4 99	
	8	1	47	469		0 55 47 48	47 26	—0 22			109 3 8 63	8 11	— 0 52	
	9	1	48	537		21 0 51 15	51 07	—0 08			108 42 29 94	29 21	— 0 73	
	10	1	49	597		21 5 53 36	53 53	+ 0 17			108 21 21 67	18 87	— 2 80	
	12	1	52	90		21 15 54 62	54 33	—0 29			107 37 27 93	26 04	— 1 89	
	17	1	57	115		21 40 32 80	32 55	—0 25			105 39 27 11	25 26	— 1 85	
	20	1	59	426		21 55 3 85	3 61	—0 24			104 23 27 09	2 65	— 1 44	
	21	2	0	334		21 59 51 86	51 40	—0 46			103 57 20 51	19 26	— 1 25	
	23	2	2	122		22 9 23 51	23 26	—0 25						
	24	2	2	587		22 14 7 49	7 34	—0 15			102 36 50 26	48 79	— 1 47	
	25	2	3	458		22 18 50 40	50 22	—0 18			102 9 21 51	18 49	— 3 02	
	26	2	4	307		22 23 32 26	31 95	—0 31			101 40 31 76	29 02	— 2 74	
	27	2	5	145		22 28 12 81	12 56	—0 25			101 13 25 77	21 5	— 4 22	
	28	2	5	570		22 32 51 97	52 04	+ 0 07			100 44 59 80	56 88	— 2 92	
	29	2	6	393		22 37 30 66	30 40	—0 26			100 16 18 03	15 61	— 2 39	
Γ b														
	2	2	9	16		22 55	53 77				98 19 6 42	1 83	— 4 9	
	3	2	9	527		23 0 27 06	27 26	+ 0 20			97 49 13 80	9 82	— 3 98	
	5	2	11	34		23 9 31 53	31 62	+ 0 09			96 48 52 94	50 00	— 2 04	
	7	2	12	116		23 18 33 07	32 74	—0 33			95 47 55 74	50 72	— 0 02	
	8	2	12	443		23 23 2 61	2 20	—0 41						
	9	2	13	164		23 27 31 42	31 00	—0 42			94 46 19 82	1 23	— 4 0	
	10	2	13	482		23 31 59 02	59 13	+ 0 11			94 1 23 68	16 04	— 7 64	
	12	2	14	490		23 40 53 52	53 69	+ 0 17			93 13 5 09	8 29	— 6 80	
	13	2	15	19		23 45	20 17				92 41 46 80	41 25	— 4	
	14	2	15	485		23 49 46 17	46 16	—0 01			92 10 27 74	19 77	— 7 97	
	15	2	16	173		23 54 11 84	11 74	—0 10			91 39 2 06	4 4	— 7 3	
	16	2	16	460		23 58 36 69	36 94	+ 0 25			91 7 33 24	26 68	— 6 6	
	17	2	17	52		0 3 1 76	1 77	+ 0 01			90 36 1 28	56 70	— 4 58	
	18	2	17	417		0 7 26 14	26 28	+ 0 14			90 4 29 83	32 47	+ 2 61	
	19	2	18	94		0 11 50 46	50 52	+ 0 06			89 33 0 68	9 38	— 1 30	
	20	2	18	364		0 16 14 03	14 48	+ 0 45			89 1 25 66	20 60	— 0 0	
	21	2	19	138		0 20 37 98	38 27	+ 0 29			88 29 54 56	49 13	— 43	
	22	2	19	307		0 25 1 75	1 86	+ 0 11			87 58 24 73	19 29	— 44	
	23	2	19	575		0 29 25 56	25 34	—0 22			87 26 57 29	51 73	— 56	
	24	2	20	142		0 33 48 04	48 70	+ 0 66			86 55 33 97	27 28	— 6 69	
	26	2	21	177		0 42 35 03	35 29	+ 0 26			85 52 56 98	50 20	— 6 8	
	27	2	21	442		0 46 58 07	58 60	+ 0 53			85 21 42 24	39 08	— 3 16	
	28	2	22	110		0 51 21 73	21 94	+ 0 21			84 50 39 94	34 12	— 8 82	
	29	2	22	367		0 55 45 12	45 38	+ 0 26			84 19 41 68	35 3	— 6 1	
M														
	1	2	23	46		1 0 8 48	8 90	+ 0 42			83 48 51 42	44 72	— 6 70	
	2	2	23	316		1 4 32 25	32 59	+ 0 34			83 18 6 85	1 25	— 5 60	
	4	2	24	265		1 13 20 43	20 57	+ 0 14			82 17 9 39	2 26	— 7 13	
	6	2	25	220		1 22 9 06	9 48	+ 0 42			81 16 51 87	43 83	— 8 04	
	8	2	26	345		1 30 59 88	59 87	—0 01			80 17 17 88	11 57	— 6 31	
	9	2	27	185		1 35 25 38	25 58	+ 0 20			79 47 50 43	44 69	— 5 74	
	11	2	27	479		1 44 17 86	18 34	+ 0 48			78 49 38 79	32 28	— 6 51	

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF VENUS (*C nt nued*)

M an S la Tm f				P i Ob	A R fr m		A R fr m	E f N A	P int Ob	N P D from		N P D	Erro f N A	
Ob tl				rv d	Ob tl		N A		rv d	Ob rv tl		from N A.		
1844					m								//	
M	12	2	28	183	C	1 48	45 01	45 43	+ 0 42	C	78 20	54 40	48 18	— 6 22
	13	2	28	49 2		1 53	12 84	13 01	+ 0 17		77 52	25 13	19 98	— 5 15
	15	2	29	52 6		2 2	9 41	9 84	+ 0 43		76 56	18 31	13 46	— 4 85
	16	2	30	25 6		2 6	38 48	39 10	+ 0 62		76 28	42 95	38 25	— 4 70
	18	2	31	32 1		2 15	39 25	39 45	+ 0 20		75 34	24 18	19 53	— 4 65
	19	2	32	7 2		2 20	9 89	10 12	+ 0 23		75 7	45 50	40 40	— 5 10
	20	2	32	42 1		2 24	41 88	42 33	+ 0 45		74 41	25 17	22 02	— 3 15
	22	2	33	54 0		2 33		47 80			73 49	56 55	50 05	— 6 50
	23	2	34	31 2		2 38	21 09	21 53	+ 0 44		73 24	43 54	37 76	— 5 78
Ap	11	2	48	14 2	1 L	4 7	1 10	1 09	— 0 01		66 51	57 29	51 53	— 5 76
	13	2	49	49		4 16		31 59			66 21	28 60	29 02	+ 0 42
	15	2	51	28 7		4 20	2 91	3 07	+ 0 16		65 53	29 60	26 66	— 2 94
	16	2	52	17		4 30		49 08			65 40	20 20	18 93	— 1 27
	17	2	53	7		4 35		35 16			65 27	47 47	47 28	— 0 19
	18	2	53	6 9		4 40	20 75	21 26	+ 0 51		65 15	51 65	51 95	+ 0 30
	20	2	55	35 4		4 49	52 78	53 33	+ 0 55		64 53	51 52	51 40	— 0 12
	22	2	57	13 5		4 59	24 23	24 68	+ 0 45		64 34	19 56	19 07	— 0 49
	24	2	58	49 6		5 8	54 45	54 73	+ 0 28		64 17	15 33	16 34	+ 1 01
	25	2	59	37 5		5 13	38 69	39 04	+ 0 35		64 9	40 80	41 39	+ 0 59
	26	3	0	25 0		5 18	22 33	22 80	+ 0 47		64 2	43 09	44 15	+ 1 06
	27	3	1	12 5		5 23	5 69	5 96	+ 0 27		63 56	23 96	24 77	+ 0 81
	29	3	2	41 9		5 32	29 59	29 80	+ 0 21		63 45	36 08	39 14	+ 3 06
	30	3	3	25 7		57	10 10	10 41	+ 0 31		63 41	7 38	12 60	+ 5 22
M y	1	3	4	8 5		41	49 44	50 00	+ 0 56		63 37	19 19	23 61	+ 4 42
	2	3	4	50 4		5 46	28 00	28 52	+ 0 52		63 34	8 69	11 99	+ 3 30
	3	3	5	31 2		5 51	5 61	6 90	+ 0 29		63 31	32 27	37 39	+ 5 12
	4	3	6	10 5		5 55	41 73	41 06	+ 0 23		63 29	36 97	39 88	+ 2 91
	10	3	9	34 3		6 22	46 47	46 83	+ 0 36		63 30	31 34	36 92	+ 5 58
	13	3	10	52 6		6 35	54 58	54 89	+ 0 31		63 38	51 42	59 33	+ 7 91
	14	3	11	15 4		6 40	13 03	13 34	+ 0 31		63 42	47 79	54 08	+ 6 29
	23	3	12	35 3		7 17	3 00	3 48	+ 0 48		64 41	12 97	24 86	+ 11 89
June	15	2	52	29 5		8 27	34 04	34 55	+ 0 51		69 25	38 86	59 17	+ 20 31
	19	2	44	5 7		8 34	54 95	55 39	+ 0 44		70 24	9 73	28 39	+ 18 66
	27	2	21	14 9		8 43	33 14	33 76	+ 0 62		72 17	35 51	56 11	+ 20 60
	29	2	14	7 1		8 44	17 34	17 85	+ 0 51		72 44	7 39	29 42	+ 22 03
J ly	4	1	53	23 6	2 L	8 43	23 65	24 20	+ 0 55		73 45	26 18	44 53	+ 18 35
	5	1	48	58 3		8 42	43 87	44 65	+ 0 78		73 56	38 69	56 60	+ 17 91
	26	23	47	26 3		7 57	32 67	33 34	+ 0 67		76 2	1 03	10 65	+ 9 62
	7	23	31	4 1		7 55	4 33	5 18	+ 0 85		76 1	59 13	7 23	+ 8 10
	28	23	24	46 0		7 52	41 25	41 75	+ 0 50		76 1	30 62	38 74	+ 8 12
Aug	3	22	49	11 0		7 40	40 67	41 11	+ 0 44		75 51	3 81	6 18	+ 2 37
	4	22	43	44 6		7 39	9 77	10 07	+ 0 30		75 48	16 36	17 11	+ 0 75
	5	22	38	26 5		7 37	47 54	48 08	+ 0 54		75 45	10 77	13 86	+ 3 09
	7	22	28	18 9		7 35	32 52	33 04	+ 0 52		75 38	28 24	30 61	+ 2 37
	11	22	10	5		7 32		1 70			75 23	21 24	19 80	— 1 44
	12	22	5	57 2		7 32	48 34	48 61	+ 0 27		75 19	19 49	18 93	— 0 56
	13	22	1	56 9		7 32	44 50	45 28	+ 0 78		75 15	14 35	15 78	+ 1 43
	15	21	54	26 9		7 33	6 78	7 23	+ 0 45		75 7	8 42	8 55	+ 0 13
	16	21	50	56 7		7 33	31 89	32 28	+ 0 39		75 3	12 27	7 23	— 5 04
	15	21	41	16 8		7 35	40 42	40 90	+ 0 48		74 51	33 75	28 82	— 4 93
Sept	5	21	7	21 7		8 8	41 28	41 22	— 0 06		74 22	2 85	54 23	— 8 62
	6	21	6	13 2		8 11	29 46	29 72	+ 0 26		74 23	20 01	8 82	— 11 19
	8	21	4	10 2	2 L	8 17	19 29	19 74	+ 0 45		74 27	0 52	51 24	— 9 28

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF VENUS (Continued)

M an Solar Tim Ob rv ti	f	P int Ob erved	A R f m Ob rv ti	A R fr m N A	Err f N A	P i t Ob d	N P D f m Ob rv ti	N P D f m N A	Erro f N A
1844	m		m						
Sept	9 21 3 16 2	2L	8 20 20 64	20 91	+ 0 27	C	74 29 31 25	20 48	- 10 77
	10 21 2 24 2		8 23 25 66	25 99	+ 0 33		74 32 25 76	15 69	- 10 07
	11 21 1 36 1		8 26 34 43	34 72	+ 0 29		74 35 45 98	37 16	- 8 82
	17 20 57 58 7		8 46 35 72	35 84	+ 0 12		75 5 27 80	17 88	- 9 92
	18 20 57 33 4		8 50 6 03	6 15	+ 0 12		75 12 3 20	52 53	- 10 67
	23 20 55 57 1		9 8 13 22	13 42	+ 0 20		75 52 2 20	55 40	- 6 80
	24 20 55 46 3		9 11 57 15	57 27	+ 0 12		76 1 29 52	22 58	- 6 94
	25 20 55 33 1		9 15 42 81	43 04	+ 0 23		76 11 30 02	18 66	- 11 36
	26 20 55 24 3		9 19 30 38	30 60	+ 0 22		76 21 52 78	43 74	- 9 04
	27 20 55 17 3		9 23 19 55	19 93	+ 0 38		76 32 47 99	37 61	- 10 38
	29 20 55 9 5		9 31 3 30	3 33	+ 0 03		76 55 57 74	51 38	- 6 36
	30 20 55 5 6		9 34 57 02	57 26	+ 0 24		77 8 22 16	11 05	- 11 11
Oct	9 20 55 38 1		10 10 6 71	56 95	+ 0 24		79 19 54 94	43 83	- 11 11
	10 20 55 44 0		10 15 1 58	1 69	+ 0 11		79 36 41 90	31 90	- 10 00
	11 20 55 53 0		10 19 7 46	7 22	- 0 24		79 53 51 80	45 90	- 5 90
	16 20 56 48 4		10 39 44 66	44 65	- 0 01		81 25 50 85	44 84	- 6 01
	17 20 56 59 8		10 43 53 99	53 88	- 0 11		81 45 23 17	16 58	- 6 59
	18 20 57 12 8		10 48 3 52	3 61	+ 0 09		82 5 16 44	9 89	- 6 55
	20 20 57 40 4		10 56 24 59	24 58	- 0 01		82 46 6 81	58 87	- 7 94
	21 20 57 55 5		11 0 35 81	35 79	- 0 02		83 6 58 46	53 54	- 4 92
	22 20 58 10 3		11 4 47 46	47 41	- 0 05		83 28 16 60	7 43	- 9 17
	23 20 58 25 4		11 8 59 68	59 50	- 0 18		83 49 45 71	40 30	- 5 41
	24 20 58 41 5		11 13 12 22	12 01	- 0 21		84 11 35 20	31 28	- 3 92
	25 20 58 58 0		11 17 25 04	24 96	- 0 08		84 34 44 73	40 09	- 4 64
	28 20 59 49 8		11 30 6 60	6 43	- 0 17		85 41 51 14	46 56	- 4 58
	30 21 0 26 5		11 38 36 46	36 13	- 0 33		86 28 29 87	27 91	- 1 96
	31 21 0 44 1		11 42 51 99	51 64	- 0 35		86 52 12 68	9 86	- 2 82
Nov	3 21 1 44 2		11 55 40 91	40 71	- 0 20		88 4 35 22	32 34	- 2 88
	5 21 2 25 6		12 4 15 77	15 60	- 0 17		88 53 45 54	44 26	- 1 28
	7 21 3 9 5		12 12 52 49	52 29	- 0 20		89 43 34 91	35 18	+ 0 27
	8 21 3 33 4		12 17 11 88	11 34	- 0 54		90 9 44 53	45 03	+ 0 0 0
	11 21 4 42 9		12 30 11 87	11 36	- 0 51		91 24 52 04	50 51	- 1 53
	12 21 5 6 6		12 34 32 83	32 41	- 0 42		91 50 25 31	24 65	- 0 66
	13 21 5 31 8		12 38 54 55	53 97	- 0 58		92 16 4 86	3 36	- 1 0
	14 21 5 57 7		12 43 16 65	16 08	- 0 57		92 41 46 63	46 04	- 0 59
	15 21 6 23 0		12 47 39 00	38 75	- 0 25		93 7 31 36	31 94	+ 0 58
	19 21 8 13 7		13 5 16 26	15 71	- 0 55		94 50 53 95	53 08	- 0 87
	20 21 8 42 6		13 9 42 05	41 59	- 0 46		95 16 45 53	44 06	- 1 47
	21 21 9 12 4		13 14 8 66	8 21	- 0 45		95 42 35 39	33 89	- 1 50
	22 21 9 43 5		13 18 36 14	35 56	- 0 58		96 8 21 5	21 69	+ 0 17
	25 21 11 20 5		13 32 2 97	2 36	- 0 61		97 25 25 53	25 92	+ 0 39
	27 21 12 28 8		13 41 4 92	4 40	- 0 52		98 16 25 54	24 77	- 0 77
	28 21 13 5 1		13 45 37 47	36 79	- 0 68		98 41 42 43	44 74	+ 2 31
Dec	1 21 14 57 4		13 59 20 08	19 45	- 0 63		99 56 54 21	57 12	+ 2 91
	3 21 16 20 8		14 8 33 41	32 81	- 0 60		100 46 16 49	17 46	+ 0 97
	4 21 16 59 2		14 13 11 67	11 02	- 0 65		101 10 39 16	40 92	+ 1 76
	5 21 17 41 9		14 17 50 94	50 26	- 0 68		101 34 50 69	52 12	+ 1 43
	10 21 21 31 5		14 41 23 36	22 65	- 0 71		103 32 12 96	15 50	+ 2 54
	11 21 22 20 8		14 46 9 24	8 45	- 0 79		103 54 54 49	55 89	+ 1 40
	23 21 33 33		15 40	49 45			107 59 47 68	52 06	+ 4 38
1845									
Jan	5 21 49 7 5		16 51 35 12	34 11	- 1 01		111 10 45 95	50 57	+ 4 62
	10 21 55 48 8		17 17 59 68	58 84	- 0 84		111 58 30 21	34 60	+ 4 39
	12 21 58 33 8		17 28 38 68	37 87	- 0 81		112 13 10 45	14 73	+ 4 28
	15 22 2 42 7		17 44 41 60	40 70	- 0 90		112 30 17 63	20 41	+ 2 78
	20 22 9 55 6		18 11 34 19	33 44	- 0 75		112 45 21 08	24 41	+ 3 33

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF VENUS (*C tued*)

M	S	Time	P	A R	A R	Err	P	N P D	N P D	Er
Ob	rv	t	Ob	rv	fr	f	nt	fr	from	f
rv	tl		ed	on	m	N A	Ob	rv	N A	N A
1845										
Jan	23	22 14 16.2	2L	18 27 44.63	43 57	-1.06	C	112 46 12.39	14 60	+ 2.21
	26	22 18 35.7		18 43 54.81	53 67	-1.14		112 40 47.75	52 75	+ 5.00
	28	22 21 27.9		18 54 40.32	39 67	-0.65		112 33 46.91	51 26	+ 4.35
	29	22 22 53.8		19 0 3.03	2 16	-0.87		112 29 15.23	18 90	+ 3.67
	30	22 24 19.1		19 5 24.99	24 52	-0.47		112 24 2.58	5 63	+ 3.05
	31	22 25 44.4		19 10 47.03	46 38	-0.65		112 18 6.39	11 43	+ 5.04
F b	2	22 28 33.8		19 21 29.06	28 69	-0.37		112 4 15.06	21 82	+ 6.76
	4	22 31 19		19 32	8 81			111 47 47.04	52 06	+ 5.02
	5	22 32 41.6		19 37 28.59	27 95	-0.64		111 38 34.42	37 82	+ 3.40
	7	22 35 24.4		19 48 4.42	3 96	-0.46		111 18 6.94	12 83	+ 5.89
	9	22 38 37		19 58 37.79	36 82	-0.97		110 55 11.11	14 96	+ 3.85
	10	22 39 22.2		20 3 52.30	51 95	-0.35		110 42 43.66	49 79	+ 6.13
	12	22 41 56.0		20 14 20.14	19 42	-0.72		110 16 4.01	9 45	+ 5.44
	13	22 43 11.5		20 19 32.16	31 77	-0.39		110 1 50.18	55 23	+ 5.05
	17	22 48 3.4		20 40 11.09	10 85	-0.24		108 59 9.21	11 27	+ 2.06
	21	22 52 38.5		21 0 32.98	32 85	-0.13		107 47 34.97	39 39	+ 4.42
	23	22 54 49.0		21 10 37.32	37 16	-0.16		107 8 45.33	48 02	+ 2.69
	24	22 55 53.1		21 15 38.42	37 67	-0.75		106 48 35.58	38 16	+ 2.58
	25	22 56 55.0		21 20 37.29	37 02	-0.27		106 27 56.90	59 87	+ 2.97
	26	22 57 56.7		21 25 35.41	35 30	-0.11		106 6 51.37	53 85	+ 2.48
	28	22 59 56.9		21 35 28.97	28 50	-0.47		105 23 18.56	20 93	+ 2.37
Mar	1	23 0 54.8		21 40 24.01	23 45	-0.56		105 0 52.17	55 65	+ 3.48
	2	23 1 51.8		21 45 17.23	17 32	+ 0.09		104 37 59.87	5 32	+ 5.45
	3	23 2 48.0		21 50 10.18	10 11	-0.07		104 14 45.07	50 77	+ 5.70
	4	23 3 43.3		21 55 2.02	1 79	-0.23		103 51 8.63	12 70	+ 4.07
	7	23 6 22.0		22 9 30.87	30 68	-0.19		102 38 2.44	4 96	+ 2.52
	9	23 8 2.4		22 19 4.92	4 86	-0.06		101 47 31.80	35 86	+ 4.06
	11	23 9 39.3		22 28 35.22	35 18	-0.04		100 55 48.44	50 59	+ 2.15
	16	23 13 25.8		22 52 5.68	5 43	-0.25		98 41 29.86	32 37	+ 2.51
	18	23 14 51.4		23 1 23.83	23 91	+ 0.08		97 46 3.20	6 50	+ 3.30
	19	23 15 32.5		23 6 1.79	2 07	+ 0.28		97 18 2.78	4 50	+ 1.72
	20	23 16 13.3	C	23 10 39.81	39 57	-0.24		96 49 50.50	50 53	+ 0.03
	21	23 16 52.6		23 15 16.42	16 45	+ 0.03		96 21 25.01	25 75	+ 0.74
	23	23 18 12.3		23 24 28.31	28 52	+ 0.21		95 24 7.43	5 31	- 2.12
	24	23 18 50.5		23 29 3.77	3 77	0.00		94 55 11.10	11 27	+ 0.17
	25	23 19 29.6		23 33 39.27	38 50	-0.77		94 26 10.02	9 07	- 0.95
	28	23 21 20.2		23 47 20.25	20 40	+ 0.15		92 58 18.05	20 04	+ 1.99
	30	23 22 33.4		23 56 26.15	26 67	+ 0.52		91 59 22.49	19 21	- 3.28
	31	23 23 8.4		0 0 59.25	59 47	+ 0.22		91 29 44.32	42 48	- 1.84
Aprl	1	23 23 45.4		0 5 32.08	32 05	-0.03		91 0 3.46	2 52	- 0.94
	2	23 24 21.6		0 10 4.36	4 53	+ 0.17		90 30 22.11	20 19	- 1.92
	3	23 24 57.2		0 14 36.72	36 80	+ 0.08		90 0 37.09	35 62	- 1.47
	4	23 25 32.6		0 19 9.20	9 05	-0.15		89 30 48.54	50 48	+ 1.94
	6	23 26 43.6		0 28 13.70	13 52	-0.18		88 31 20.98	19 41	- 1.57
	7	23 27 19.2		0 32 45.89	45 80	-0.09		88 1 37.82	35 27	- 2.55
	8	23 27 55.1		0 37 18.44	18 17	-0.27		87 31 54.15	52 82	- 1.33
	9	23 28 31.0		0 41 50.98	50 64	-0.34		87 2 15.56	12 92	- 2.64
	10	23 29 7.0		0 46 23.36	23 31	-0.05		86 32 38.32	36 25	- 2.07
	11	23 29 43.9		0 50 56.16	56 16	0.00		86 3 7.09	3 61	- 3.48
	12	23 30 19.0		0 55 28.83	29 25	+ 0.42		85 33 39.46	35 57	- 3.89
	13	23 30 55.8		1 0 2.17	2 62	+ 0.45		85 3 15.47	13 01	- 2.46
	14	23 31 32.7		1 4 36.22	36 32	+ 0.10		84 34 58.30	56 52	- 1.78
	15	23 32 10.7		1 9 10.32	10 37	+ 0.05		84 5 49.76	46 84	- 2.92
	16	23 32 47.9		1 13 44.24	44 66	+ 0.42		83 36 47.40	44 50	- 2.90
	17	23 33 26.4		1 18 19.27	19 72	+ 0.45		83 7 53.21	50 47	- 2.74
	18	23 34 5.0		1 22 54.79	55 10	+ 0.31		82 39 9.35	5 53	- 3.82

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF VENUS (*Continued*)

M	S	lar	T	m	f	P	I	Ob	A	R	f	r	m	A	R	f	m	E	f	N	A	P	O	I	N	I	D	f	r	m	N	P	D	E	r	f	N	A
Ob									Obs					N	A										Ob	r	v	t										
1845																																						
Ap	1	21	23	36	4			C	1	36	43	93	44	62				+ 0 69				C			81	13	5	15	51	00				— 4 15				
		22	23	36	45	7			1	41	21	73	22	28				+ 0 55							80	45	52	49	48	52				— 3 97				
		23	23	37	26	8			1	45	59	88	0	70				+ 0 82							80	18	0	82	58	78				— 2 04				
		24	23	38	9	1			1	50	39	25	39	8				+ 0 57							79	50			22	37								
		25	23	38	52	3			1	5	19	22	19	66				+ 0 44							79	23	3	00	59	82				— 3 18				
		27	23	40	21	0			2	4	41	08	41	81				+ 0 73							78	9	1	66	59	41				— 2 2				
		29	23	41	54	3			2	14	6	59	7	27				+ 0 68							77	36	4	85	3	85				— 1 00				
M	y	2	23	44	18	1			2	28	21	96	22	38				+ 0 42							76	18	58	94	54	62				— 4 32				
		24	0	5	40	5			4	12	35	10	35	22				+ 0 12							69	1	1	20	56	32				— 4 88				
		30	0	13	14	2			4	43	49	29	49	30				+ 0 01							67	38	9	43	5	34				— 4 09				
		31	0	14	33	1			4	49	4	87	4	94				+ 0 07							67	26	28	97	26	94				— 2 03				
J	ne	1	0	15	53	1			4	54	21	60	21	45				— 0 15							67	15	28	81	27	33				— 1 48				
		3	0	18	34	7			5	4	56	59	56	86				+ 0 27							66	55	28	87	25	81				— 3 06				
		5	0	21	19	8			5	15	35	06	35	18				+ 0 12							66	38	6	09	4	24				— 1 85				
		7	0	24	6	7			5	26	16	13	15	97				— 0 16							66	23	27	25	2	69				— 1 56				
		8	0	2	31	4			5	31	37	23	37	15				— 0 08							66	17	10	77	8	49				— 2 28				
		9	0	26	56	0			5	36	58	61	58	83				+ 0 22							66	11	30	07	33	01				— 2 06				
		10	0	28	19	9			5	42	20	48	20	88				+ 0 40							66	6	42	29	39	42				— 2 87				
		13	0	32	38	9			5	58	28	54	28	88				+ 0 34							65	56	14	89	13	21				— 1 68				
		16	0	36	58	2			6	14	38	06	38	41				+ 0 35							65	52	12	55	11	92				— 0 63				
		17	0	38	25	6			6	20	1	26	1	59				+ 0 33							65	52	17	77	17	37				— 0 40				
		20	0	42	43	0			6	36	10	25	10	68				+ 0 43							65	56	53	85	52	10				— 1 75				
		28	0	53	58	0			7	18	59	34	59	91				+ 0 57							66	40	24	12	22	27				— 1 8				
J	ly	2	0	59	21	3			7	40	9	67	9	86				+ 0 19							67	18	46	91	45	13				— 1 78				
		3	1	0	40	3			7	45	25	27	25	28				+ 0 01							67	30	2	89	1	15				— 1 74				
		4	1	1	57	6			7	50	39	68	39	79				+ 0 11							67	41	56	82	56	36				— 0 46				
		5	1	3	14	3			7	55	53	17	53	34				+ 0 17							67	4	28	93	30	57				+ 1 64				
		7	1	5	45	3			8	6	17	53	17	47				— 0 06							68	21			33	04								
		11	1	10	33	3			8	26	52	72	2	53				— 0 19							69	22	59	33	0	04				+ 0 71				
		12	1	11	42	3			8	31	58	59	58	52				— 0 07							69	39	50	34	50	58				+ 0 24				
Aug	3	1	31	57	9				10	19	1	22	0	89				— 0 33							77		33		8	67				+ 1 34				
	5	1	33	22					17	38			17	38										78	49	39	05	39	90				+ 0 85					
	9	1	35	55	9				10	46	39	01	38	97				— 0 04							80	42	4	16	5	31				+ 1 15				
	12	1	37	43	3				11	0	16	05	16	12				+ 0 07							82	8	58	28	58	32				+ 0 04				
	13	1	38	17	5				11	4	47	37	46	94				— 0 43							82	38	18	77	21	45				+ 2 68				
	21	1	42	28	6				11	40	31	77	31	20				— 0 57							86	39	21	73	23	64				+ 1 91				
	23	1	43	26	7				11	49	22	98	22	57				— 0 41							87	40	50	50	52	86				+ 2 36				
	24	1	43	54	8				11	3	47	88	47	79				— 0 09							88	11	41	71	44	65				+ 2 94				
	25	1	44	24	9				11	58	13	31	12	71				— 0 60							88	42	39	35	40	28				+ 0 93				
	29	1	47	15					12	15			50	82											90	46	46	70	47	99				+ 1 29				
Sept	2	1	48	6	3				12	33	29	05	28	25				— 0 80							92	51	0	97	1	71				+ 0 74				
	8	1	50	56	7				12	59	59	80	58	69				— 1 11							95	55	49	80	53	57				+ 3 77				
	9	1	51	30	6				13	4	25	51	24	77				— 0 74							96	26	21	77	22	61				+ 0 84				
	10	1	51	56	0				13	8	51	94	51	25				— 0 69							96	56	41	62	44	15				+ 2 53				
	11	1	52	6	3				13	13	18	73	18	14				— 0 59							97	26	55	99	57	59				+ 1 60				
	12	1	52	56	8				13	17	46	27	45	50				— 0 77							97	57	0	76	2	03				+ 1 27				
	13	1	53	28	2				13																													

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF VENUS (Continued)

M	Sol	Time	f	P. to Ob	A. R. f. m	A. R. f. m	E. f. N. A.	P. to Ob	N. P. D. f. m	N. P. D.	E. f. N. A.
Ob	rv	ti		d	Ob	ti	N. A.	d	Ob	f. m	N. A.
1845					m						
Sept	27	2	1 58 0	1 L	14 25 57 70	57 10	—0 60	C	105 2 6 27	6 42	+ 0 15
	29	2	3 25 2		14 35 18 25	17 56	—0 69		105 53 49 83	51 06	+ 1 23
	30	2	4 10 2		14 39 59 78	59 35	—0 43		106 19 10 27	10 56	+ 0 29
Oct	1	2	4 56 3		14 44 42 82	42 21	—0 61	NL	106 44 4 94	7 14	+ 2 20
	2	2	5 43 4		14 49 26 74	26 11	—0 63		107 8 37 76	40 17	+ 2 41
	3	2	6 31 7		14 54 11 54	11 10	—0 44		107 32 46 50	48 70	+ 2 20
	5	2	8 11 4		15 3 44 76	44 38	—0 38		108 19 48 07	49 58	+ 1 51
	7	2	9 56 2		15 13 22 55	22 02	—0 53		109 4 59 84	3 62	+ 3 78
	8	2	10 49 7		15 18 13 14	12 50	—0 64		109 27 0 05	58 80	— 1 2
	9	2	11 44 2		15 23 4 51	4 10	—0 41		109 48 23 73	25 29	+ 1 56
	10	2	12 40		15 27 57 43	6 76	—0 67		110 9 22 03	22 08	+ 0 05
	11	2	13 37 5		15 32 51 36	50 55	—0 81		110 29 51 83	48 60	— 3 23
	20	2	22 57 3		16 17 41 92	41 28	—0 64		113 9 8 26	9 22	+ 0 96
	21	2	24 4 3		16 22 45 58	45 10	—0 48		113 23 58 97	55 53	— 3 44
	22	2	25 12 5		16 27 50 40	49 77	—0 63		113 38 2 95	4 44	+ 1 49
	23	2	26 21 1		16 32 55 89	55 30	—0 59		113 51 37 5	35 47	— 2 08
	24	2	27 30 8		16 38 2 09	1 62	—0 47		114 4 27 82	27 92	+ 0 10
	25	2	28 40 7		16 43 9 26	8 67	—0 59		114 16 39 93	41 40	+ 1 47
	26	2	29 53 1		16 48 17 27	16 42	—0 85		114 28 12 59	15 38	+ 2 79
	28	2	32 15 5		16 58 34 18	33 84	—0 34		114 49 20 65	23 26	+ 2 61
	31	2	35 54 8		17 14 4 29	3 92	—0 37		115 15 58 85	58 51	— 0 31
N v	1	2	37 19 4		17 19 15 08	14 69	—0 39		115 23 26 34	26 92	+ 0 58
	3	2	39 38 3		17 29 37 67	37 15	—0 52		115 36 13 44	17 39	+ 3 95
	5	2	42 7 7		17 40 0 60	0 09	—0 51		115 46 15 99	17 49	+ 1 0
	6	2	43 22 7		17 45 11 90	11 58	—0 32		115 50 8 99	13 24	+ 4 25
	7	2	44 37 2		17 50 23 59	22 98	—0 61		115 53 24 92	25 90	+ 0 98
	8	2	45 51 5		17 55 34 66	34 23	—0 43		115 55 55 66	5 41	— 0 2
	10	2	48 19 1		18 5 56 15	55 85	—0 30		115 58 4 45	44 91	— 0 54
	17	2	56 40 9		18 41 54 99	54 52	—0 17		115 46 3 24	2 73	— 0 51
	19	2	58 57 2		18 52 4 35	3 89	—0 16		115 36 5 39	2 74	— 2 6
	24	3	4 16 3		19 17 7 63	7 14	—0 49		114 69 6 23	3 22	— 3 01
	27	3	7 11 5		19 31 52 77	52 47	—0 30	SL	114 29 0 18	54 90	— 5 28
	29	3	9 0 2		19 41 34 94	34 69	—0 25		114 5 47 42	39 44	— 7 98
De	4	3	13 1 0		20 5 19 03	18 45	—0 58		112 57 13 54	3 04	— 10 50
	5	3	13 43 1		20 9 57 54	57 27	—0 27		112 41 47 52	3 71	— 9 81
	9	3	16 10 4		20 28 11 49	10 99	—0 50		111 34 52 29	40 98	— 11 31
	19	3	19 31 9		21 10 58 35	58 12	—0 23		108 15 27 39	17 23	— 10 16
	22	3	19 41 4		21 22 58 23	57 59	—0 64		107 8 20 14	6 91	— 13 23
1846											
Jan	3	3	15 58 9		22 6 34 03	33 77	—0 26		102 17 8 14	16 57 48	— 10 66
	5	3	14 37 4		22 13 5 15	4 81	—0 34		101 26 28 82	15 74	— 13 08
	6	3	13 51 3		22 16 15 69	15 08	—0 61		101 1 3 27	0 49 09	— 14 18
	9	3	8 11 2		22 25 23 99	23 58	—0 41		99 44 31 52	18 85	— 12 67
	10	3	10 9 3		22 28 19 00	18 73	—0 27		99 19 0 61	49 10	— 11 51
	14	3	6 23 0		22 39 18 42	18 17	—0 25		97 37 33 33	22 71	— 10 62
	15	3	4 0 9		22 41 52 42	52 24	—0 18		97 12 28 86	15 41	— 13 45
	19	2	57 44 9		22 51 21 75	21 73	—0 0		95 33 35 07	22 07	— 13 00
	22	2	52 10 3		22 57 36 11	35 98	—0 13		94 21 44 07	31 70	— 12 37
	23	2	50 8 6		22 59 30 11	29 86	—0 25		93 58 24 57	9 41	— 15 16
	24	2	48 0 0		23 1 18 12	18 00	—0 12		93 35 20 27	7 31	— 12 96
	26	2	43 26 1		23 4 36 71	36 39	—0 32		92 50 23 59	10 60	— 12 99
	27	2	41 0 1		23 6 6 64	6 28	—0 36		92 28 33 91	19 58	— 14 33
	28	2	39 26 8		23 7 29 96	29 64	—0 32		92 7 8 41	6 56 25	— 12 16
	29	2	35 47 4		23 8 46 37	46 32	—0 05		91 46 13 62	2 53	— 11 09
	31	2	30 7 4		23 10 59 15	58 74	—0 41		91 6 6 36	56 21	— 10 15

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF VENUS (*Continued*)

M	S	lar	T	m	f	P	ln	Ob	A	R	f	m	A	R	f	m	Err	f	N	A	P	lt	Ob	N	P	D	f	m	N	P	D	f	m	Err	f	N	A
Ob	rv	tl				rv	d	tl	Ob	tl			N	A							rv	d	Ob	rv	tl	f	m	N	A								
1846																																					
F b	3	2	20	42	5	1	L	23 13 21 85	21 76	— 0 09	SL	90 10 29 58	21 41	— 8 17																							
	4	2	17	18	6			23 13 54 14	53 76	— 0 38		89 53 22 14	9 11	— 13 03																							
	5	2	13	46	2			23 14 17 87	17 57	— 0 30		89 37 0 40	36 47 98	— 12 42																							
	6	2	10	5	7			23 14 33 18	33 05	— 0 13		89 21 25 63	16 01	— 9 62																							
	10	1	53	57	1			23 14 8 49	8 44	— 0 05		88 28 22 40	11 70	— 10 70																							
	11	1	49	33	0			23 13 40 61	40 20	— 0 41		88 17 34 21	25 84	— 8 37																							
	12	1	45	0	1			23 13 3 10	3 02	— 0 08		88 7 53 66	45 28	— 8 38																							
	13	1	40	18	1			23 12 16 81	16 97	+ 0 16		87 59 23 44	12 68	— 10 76																							
	15	1	30	28	0			23 10 18 31	18 49	+ 0 18		87 45 48 94	40 75	— 8 19																							
	18	1	14	39	5			23 6 17 15	17 53	+ 0 38		87 34 53 36	46 35	— 7 01																							
	19	1	9	7	8			23 4 41 11	41 52	+ 0 41		87 33 51 91	45 06	— 6 85																							
	20	1	3	29	2			23 2 57 90	58 29	+ 0 39		87 34 10 49	3 68	— 6 81																							
	23	0	45	54	8			22 57 10 48	10 63	+ 0 15		87 43 5 47	0 66	— 4 81																							
	25	0	33	55	3			22 52 53 08	53 46	+ 0 38		87 55 36 12	31 98	— 4 14																							
	27	0	21	24	7			22 48 22 50	22 84	+ 0 34		88 13 5 25	59 82	— 5 43																							
	28	0	15	10	5	2	L	22 46 3 70	4 56	+ 0 86		88 23 30 56	27 53	— 3 03																							
Ma	1	0	8	59	8			22 43 45 12	45 41	+ 0 29		88 35 0 95	58 25	— 2 70																							
	2	0	2	45	3			22 41 26 09	26 48	+ 0 39		88 47 31 48	28 95	— 2 53																							
	2	23	56	32	0			22 39 7 83	8 49	+ 0 66		89 0 56 78	52 95	— 3 83																							
	3	23	50	20	4			22 36 52 06	52 31	+ 0 25		89 15 7 46	5 66	— 1 80																							
	4	23	44	11	7			22 34 8 52	38 91	+ 0 39		89 30 5 98	1 08	— 4 90																							
	5	23	37	56	6			22 32 29 09	29 14	+ 0 05		89 45 35 86	32 69	— 3 17																							
	6	23	32	5	3			22 30 23 69	23 86	+ 0 17		90 1 35 51	34 67	— 0 84																							
	8	23	20	19	9			22 26 28 98	29 64	+ 0 66		90 34 43 60	42 88	— 0 62																							
	9	23	14	36	7			22 24 41 81	42 14	+ 0 33		90 51 33 23	36 30	+ 3 07																							
	10	23	9	1	0			22 23 1 45	1 86	+ 0 41		91 8 33 12	34 42	+ 1 30																							
	11	23	3	33				22 21	29 31			91 25 29 46	30 87	+ 1 41																							
	13	22	53	1	5			22 18 48 73	49 39	+ 0 66		91 58 58 11	57 63	— 0 48																							
	16	22	38	21	5			22 15 56 37	56 91	+ 0 54	NL	92 46 40 31	45 07	+ 4 76																							
	17	22	33	47	0			22 15 17 83	18 22	+ 0 39		93 1 39 07	45 99	+ 6 92																							
	18	22	29	21	7			22 14 48 61	49 06	+ 0 45		93 16 8 10	13 16	+ 5 06																							
	19	22	25	6	3			22 14 28 57	29 46	+ 0 89		93 29 59 41	63 88	+ 4 47																							
	20	22	20	59	9			22 14 18 81	19 56	+ 0 75		93 43 6 82	15 62	+ 8 80																							
	22	22	14	16	2			22 14 26 54	27 19	+ 0 65		94 7 27 27	34 55	+ 7 28																							
	23	22	9	38	1			22 14 44 48	44 89	+ 0 41		94 18 30 57	37 50	+ 6 93																							
	24	2	6	8	6			22 15 10 95	11 61	+ 0 56		94 28 47 83	54 87	+ 7 04																							
	25	22	2	49	3			22 15 46 45	46 85	+ 0 40		94 38 18 40	25 82	+ 7 42																							
	26	21	59	35	6			22 16 30 38	30 72	+ 0 34		94 47 1 71	9 58	+ 7 87																							
	27	21	56	31	5			22 17 22 47	22 80	+ 0 33		94 54 57 02	5 28	+ 8 26																							
	29	21	50	48	4			22 19 30 65	30 78	+ 0 13		95 8 21 83	31 62	+ 9 79																							
	30	21	48	6	7			22 20 45 82	46 14	+ 0 32		95 13 55 32	62 18	+ 6 86																							
	31	21	45	33	2			22 22 8 38	8 71	+ 0 33		95 18 37 34	44 37	+ 7 03																							
Apr 1	1	21	43	7	1			22 23 37 98	38 27	+ 0 29		95 22 30 07	38 42	+ 8 35																							
	2	21	40	47	1			22 25 14 28	14 54	+ 0 26		95 25 35 70	44 48	+ 8 78																							
	3	21	38	33	3			22 26 56 99	57 29	+ 0 30		95 27 55 60	62 88	+ 7 28																							
	5	21	34	25	0			22 30 40 90	41 17	+ 0 27		95 30 8 39	18 37	+ 9 98																							
	6	21	32	29	7			22 32 41 87	41 89	+ 0 02		95 30 8 16	16 47	+ 8 31																							
	8	21	28	54	7			22 36 59 49	59 59	+ 0 10		95 27 45 26	56 47	+ 11 21																							
	9	21	27	14	9			22 39 15 88	16 15	+ 0 27		95 25 31 64	39 61	+ 7 97																							
	10	21	25	40	0			22 41 37 28	37 55	+ 0 27		95 22 30 03	39 18	+ 9 15																							
	12	21	22	44	6			22 46 33 92	34 17	+ 0 25		95 14 21 88	31 11	+ 9 23																							
	15	21	18	52	1			22 54 30 18	30 36	+ 0 18		94 56 58 76	68 34	+ 9 58																							
	17	21	16	34	0			23 0 6 38	6 64	+ 0 26		94 42 9 06	18 12	+ 9 06																							
	20	21	13	34	7			23 8 55 55	55 83	+ 0 28		94 15 18 41	27 28	+ 8 87																							
	21	21	12	40	4			23 11 57 93	58 23	+ 0 30		94 5 10 97	20 48	+ 9 51																							
	6	21	8	48	8			23 27 48 77	48 99	+ 0 22		93 6 34 49	43 38	+ 8 89																							
	27	21	8	9	5			23 31 6 01	6 09	+ 0 08		92 53 20 79	29 64	+ 8 85																							

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF VENUS (Continued)

M S i T m f	P i t Ob	A R f r m	A R f m	E f N A	P i Ob	N P D f	N P D	E f N A
Ob t l	r v d	Ob t l	N A		d	Ob r v t	f m N A	
1846								
A ₁ m l 29 21 6 57 3	2 L	23 37 46 13	46 39	+ 0 26	N L	92 25 31 12	38 90	+ 7 78
M y 3 21 4 54 1		23 51 29 08	29 13	+ 0 05		91 24 41 17	48 16	+ 6 99
4 21 4 27 3		23 54 58 92	59 06	+ 0 14		91 8 27 07	35 65	+ 8 58
5 21 4 24		23 58 30 41	30 56	+ 0 15		90 51 53 02	60 25	+ 7 23
6 21 3 38 7		0 2 3 51	3 57	+ 0 06		90 34 56 22	64 77	+ 8 55
7 21 3 17 0		0 5 38 05	38 06	+ 0 01		90 17 42 16	47 61	+ 5 45
10 21 2 18 9		0 16 29 52	29 92	+ 0 40		89 23 55 06	61 94	+ 6 88
13 21 1 33 5		0 27 33 35	33 75	+ 0 40		88 27 31 20	38 77	+ 7 57
15 21 1 9 4		0 35 2 07	2 55	+ 0 48		87 48 39 52	46 86	+ 7 34
17 21 0 49 8		0 42 35 93	36 07	+ 0 14		87 8 57 29	61 57	+ 4 28
18 21 0 41 8		0 46 24 19	24 54	+ 0 35		86 48 45 26	50 90	+ 5 64
20 21 0 28 7		0 54 4 49	4 84	+ 0 35		86 7 52 46	57 95	+ 5 49
21 21 0 23 8		0 57 56 33	56 62	+ 0 29		85 47 12 07	17 14	+ 5 07
26 21 0 16 1		1 17 31 34	31 45	+ 0 11		84 1 57 89	61 53	+ 3 64
June 4 21 1 7 4		1 53 51 49	51 74	+ 0 25		80 48 49 03	51 09	+ 2 06
5 21 1 18 0		1 57 59 12	59 35	+ 0 23		80 27 22 36	24 27	+ 1 91
8 21 1 57 9		2 10 28 50	28 83	+ 0 33		79 23 22 67	24 81	+ 2 14
9 21 2 13 3		2 14 40 64	40 94	+ 0 30		79 2 13 70	14 51	+ 0 81
10 21 2 30 4		2 18 54 10	54 19	+ 0 09		78 41 9 61	9 88	+ 0 24
14 21 3 48 4		2 35 58 61	59 03	+ 0 42		77 18 5 05	5 83	+ 0 78
18 21 5 25 1		2 53 12 87	23 19	+ 0 32		75 57 34 57	37 30	+ 2 3
19 21 5 53 2		2 57 46 83	47 31	+ 0 48		75 37 59 76	60 13	+ 0 37
21 21 6 52 2		3 6 38 86	39 22	+ 0 36		74 59 28 81	26 95	- 1 83
July 2 21 13 43 0		3 56 53 35	53 51	+ 0 16		71 47 55 29	52 66	- 2 63
3 21 14 27 6		4 1 34 61	34 99	+ 0 38		71 32 32 26	30 79	- 1 47
7 21 17 39 3		4 20 32 84	33 09	+ 0 25		70 35 8 43	5 26	- 3 17
8 21 18 30 0		4 25 20 23	20 64	+ 0 41		70 21 48 96	47 55	- 1 41
20 21 30 5 6		5 24 17 11	17 47	+ 0 36	C	68 20 0 59	55 80	- 4 79
29 21 40 10 4		6 9 51 59	51 93	+ 0 34		67 40 13 76	8 76	- 5 00
30 21 41 19 9		6 14 58 13	58 61	+ 0 48		67 38 47 56	42 18	- 5 38
A g 10 21 55 24 4		7 11 27 30	27 74	+ 0 44		68 3 49 79	44 28	- 5 51
16 22 1 30 8		7 42 14 07	14 52	+ 0 46		68 49 16 32	11 24	- 5 08
17 22 2 41 1		7 47 20 88	21 23	+ 0 35		68 59 0 34	54 63	- 5 71
23 22 9 30 7		8 17 50 48	51 05	+ 0 57		70 9 47 67	44 12	- 3 55
24 22 10 36 9		8 22 53 66	53 96	+ 0 30		70 23 37 34	34 08	- 3 26
26 22 13 26 9		8 32 57 65	57 72	+ 0 07		70 52 58 56	54 92	- 3 64
27 22 13 51 4		8 37 58 46	58 54	+ 0 08		71 8 29 31	24 88	- 4 43
28 22 14 54 2		8 42 58 57	58 59	+ 0 02		71 24 31 30	27 34	- 3 96
30 22 16 59		8 52	56 41			71 58 10 93	7 49	- 3 44
Sept. 6 22 23 48 2		9 27 23 37	23 41	+ 0 04		74 11 47 18	44 93	- 2 25
14 22 30 48 2	C	10 5 57 01	56 85	- 0 16		77 11 18 38	17 69	- 0 69
23 22 37 49 1		10 48 22 09	22 00	- 0 09		81 0 57 57	55 19	- 2 38
28 22 41 12 3		11 11 34 47	34 32	- 0 15		83 18 12 42	11 77	- 0 65
29 22 41 53 3		11 16 11 67	11 30	- 0 37		83 46 18 70	18 35	- 0 35
Oct 23 22 57 24 2		13 6 22 73	22 25	- 0 48		95 30 42 18	42 63	+ 0 45
25 22 58 47 9		13 15 39 41	38 88	- 0 53		96 29 4 30	4 54	+ 0 24
26 22 59 30 4		13 20 18 81	18 04	- 0 77		96 58 4 76	4 61	- 0 15
28 23 0 57 2		13 29 38 75	38 03	- 0 72		97 55 38 63	6 93	- 1 70
29 23 1 41 2		13 34 19 89	19 31	- 0 58		98 24 11 20	9 98	- 1 22
30 23 2 26 7		13 39 1 64	1 14	- 0 50		98 52 29 43	31 02	+ 1 59
Nov 1 23 3 59 3		13 48 27 59	27 11	- 0 48		99 48 34 82	36 84	+ 2 02
2 23 4 47 7		13 53 12 03	11 32	- 0 71		100 16 17 26	0 31	+ 3 05

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF VENUS (*Continued*)

Mars lar Tm f Ob rv d	P int Ob d	A R from Ob d	A R fr m N A	E f N A	P it Ob- rv d	N P D f m Ob	N i D fr m N A	E f N A
1846 N v 4 23 6 24 6 5 23 7 14 9	C	14 2 43 14 14 7 30 16	42 40 29 31	-074 -085	C	101 11 0 21 101 38 1 97	3 88 2 63	+ 3 67 + 0 66
1847 Jan 6 0 28 19 6 8 0 31 14 8 11 0 35 30 4 12 0 36 53 2 13 0 38 15 6 14 0 39 36 9 15 0 40 56 9 16 0 42 15 7 18 0 44 49 4 20 0 47 19 0 21 0 48 31 9 22 0 49 42 9 26 0 54 15 5 27 0 55 20 2	1 L	19 29 18 26 19 40 6 96 19 56 12 86 20 1 32 27 20 6 51 69 20 12 9 65 20 17 26 77 20 22 41 87 20 33 9 98 20 43 33 07 20 48 42 16 20 53 49 80 21 14 10 02 21 19 11 48	17 27 5 94 12 05 32 22 51 18 9 08 25 85 41 50 9 15 31 91 41 39 49 60 9 41 11 07	-099 -1 02 -081 -005 -051 -057 -092 -037 -083 -1 16 -077 -020 -061 -041	SL	112 51 17 39 112 30 39 47 111 54 35 34 111 41 12 58 111 27 10 29 111 12 31 83 110 57 13 63 110 41 19 90 110 7 42 03 109 31 42 24 109 12 51 70 108 53 28 34 107 30 33 68 107 8 35 84	19 33 40 4 35 31 13 33 12 49 33 15 15 85 21 34 42 97 43 48 52 46 28 27 34 11 34 97	+ 1 94 + 1 07 - 0 03 + 0 75 + 2 20 + 1 32 + 2 22 + 1 44 + 0 94 + 1 24 + 0 76 - 0 07 + 0 43 - 0 87
F b 1 1 0 24 8 13 1 10 38 8 16 1 12 49 4 18 1 14 11 9 20 1 15 31 9 23 1 17 26 4 24 1 18 3 4 25 1 18 40 0 26 1 19 16 2 27 1 19 52 0		21 44 0 33 22 41 33 76 22 55 34 24 23 4 50 11 23 14 3 28 23 27 47 85 23 32 21 51 23 36 54 85 23 41 27 53 23 46 0 01	0 24 33 15 34 11 50 24 3 39 48 10 21 79 54 96 27 66 59 92	-009 -061 -013 +013 +011 +025 +028 +011 +013 -009		10 11 42 57 99 2 0 29 98 25 22 64 97 26 32 37 96 26 51 94 94 56 12 10 94 25 41 91 93 55 6 22 93 24 17 78 92 53 29 12	43 35 59 44 21 32 28 74 47 93 7 69 36 88 59 67 15 78 26 34	+ 0 78 - 0 85 - 1 32 - 3 63 - 4 01 - 4 41 - 6 03 - 6 55 - 2 00 - 2 78
Ma 3 1 22 10 5 4 1 22 44 5 6 1 23 51 9 8 1 24 59 5 9 1 25 33 1 10 1 26 6 9 11 1 26 40 8 12 1 27 14 6 13 1 27 48 8 19 1 31 19 0 23 1 33 47 5 24 1 34 25 9 25 1 35 4 8 26 1 35 44 8 27 1 36 25 2 29 1 37 48 1 31 1 39 14 7		0 4 5 29 0 8 35 89 0 17 36 82 0 26 37 54 0 31 8 06 0 35 38 01 0 40 8 21 0 44 39 06 0 49 9 96 1 16 19 81 1 34 35 39 1 39 10 35 1 43 45 86 1 48 22 60 1 52 59 38 2 2 16 06 2 11 35 43	5 42 36 11 37 06 37 67 7 96 38 30 8 70 39 23 9 97 20 16 35 31 10 47 46 25 22 65 59 75 16 12 35 58	+013 +022 +024 +013 -010 +029 +049 +017 +001 +035 -008 +012 +039 +005 +037 +006 +015	C SL C SL C SL	90 49 32 04 90 18 26 55 89 16 17 50 88 13 58 65 87 42 52 60 87 11 57 86 86 40 52 20 86 10 1 55 85 39 9 35 82 36 29 67 80 37 51 51 80 8 41 06 79 39 47 49 79 11 5 46 78 42 43 66 77 46 37 48 76 51 39 94	28 23 22 12 7 31 53 58 48 98 47 00 48 16 53 48 3 38 23 30 45 32 36 16 40 83 59 91 34 67 30 79 37 11	- 3 81 - 4 43 - 10 19 - 5 07 - 3 62 - 10 86 - 4 04 - 8 07 - 5 97 - 6 37 - 6 19 - 4 90 - 6 66 - 5 55 - 8 99 - 6 69 - 2 83
April 2 1 40 44 3 3 1 41 30 0 5 1 43 4 7 6 1 43 8 1 45 34 3 9 1 46 25 9 10 1 47 18 5 13 1 50 3 2 14 1 51 0 3 19 1 56 0 6 22 1 59 12 6 23 2 0 19 0		2 20 58 53 2 25 41 18 2 30 9 17 2 40 2 49 28 92 2 54 17 08 2 59 6 69 3 13 41 24 3 18 34 59 3 43 18 62 3 58 20 99 4 3 23 97	58 34 41 05 9 25 28 73 17 28 6 78 41 52 35 22 19 10 21 44 24 10	-019 -013 +008 -019 +020 +009 +028 +063 +048 +045 +013		75 58 2 92 75 31 43 09 74 40 11 11 74 14 58 73 73 25 41 85 73 1 37 71 72 38 0 88 71 29 53 12 71 8 6 30 69 26 41 23 68 32 11 71 68 15 12 07	58 71 39 64 5 48 51 90 35 10 33 44 57 32 48 83 2 16 35 92 8 53 5 30	- 4 21 - 3 45 - 5 63 - 6 83 - 6 75 - 4 27 - 3 56 - 4 29 - 4 14 - 5 31 - 3 18 - 6 77

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF MARS (*C n t n u d*)

M S lar Tim f	P IntOb-	A R fr m	A R. from	Er f N A	P i t Ob	N P D fr m	N P D	E f N A
Ob ti n.	d	Ob ti	N A		rv d	Ob rv ti	f m N A	
1832						/	/	
Feb 29 20 52 36 5	C	19 28 19 85			C	112 39 11 44		
Mar 1 20 51 46 6		19 31 28 85				112 33 19 97		
2 20 50 59 1		19 34 37 48				112 27 16 66		
3 20 50 11 1		19 37 45 86				112 20 58 83		
4 20 49 23 2		19 40 54 33				112 14 29 33		
5 20 48 34 6		19 44 2 45				112 7 41 48		
6 20 47 46 0		19 47 10 19				112 0 44 93		
7 20 46 57 0		19 50 17 52				111 53 36 60		
11 20 43 43 3		20 2 45 78				111 22 42 49		
12 20 42 50 1		20 5 52 49				111 14 29 98		
13 20 41 59 9		20 8 58 72				111 6 1 70		
15 20 40 18 7		20 15 10 20				110 48 31 52		
19 20 36 52 8		20 27 30 12				110 11 6 67		
20 20 36 0 3		20 30 34 26				110 1 18 55		
27 20 29 46 8		20 51 55 48				108 47 4 53		
31 20 26 5 8		21 3 59 97				108 0 46 52		
Apr 1 20 25 10 0		21 9 0 29				107 48 45 93		
2 20 24 13 0		21 10 0 29				107 36 34 88		
3 20 23 15 9		21 12 59 45				107 24 14 52		
5 20 21 21 2		21 18 57 50				106 59 7 75		
6 20 20 23 2		21 21 55 82				106 42 25 16		
7 20 19 24 6		21 24 53 87				106 33 24 53		
12 20 14 26 2		21 39 38 65				105 26 30 82		
13 20 13 25 5		21 42 34 69				105 12 44 80		
14 20 12 25 0		21 45 30 02				103 58 51 48		
21 20 5 10 2		22 5 49 00				103 17 53 81		
30 19 55 23 2		22 31 30 00				101 0 26 06		
May 1 19 54 16 4		22 34 19 19				100 44 44 28		
2 19 53 8 6		22 37 8 03				100 28 56 79		
4 19 50 53 0		22 42 45 21				99 57 8 71		
5 19 49 45 7		22 45 33 97				99 41 4 56		
12 19 41 44 8		23 5 2 24				97 47 16 12		
14 19 39 17 5		23 10 33 11				97 14 20 11		
15 19 38 10 6		23 13 18 19				96 57 45 77		
16 19 36 58 1		23 16 2 83				96 41 12 00		
31 19 18 28 4		23 56 42 76				92 30 45 75		
J ne 9 19 6 58 5		0 20 38 52				89 59 31 41		
10 19 5 40 3		0 23 16 93				89 48 54 46		
11 19 4 21 8		0 25 54 81				89 26 24 79		
12 19 3 3 3		0 28 32 67				89 9 56 28		
13 19 1 44 7		0 31 10 54				88 53 24 49		
14 19 0 26 0		0 33 47 89				88 37 2 38		
15 18 59 6 7		0 36 25 19				88 20 40 97		
17 18 56 27 4		0 41 38 18				87 51 8 38		
22 18 49 42 1		0 54 34 69				86 27 46 72		
Nov 9 12 44 40 3		4 0 30 87				68 58 19 42		
15 12 11 47 2		3 51 11 51						
16 12 6 15 7		3 49 36 07				69 8 27 52		
17 12 0 13 7		3 47 28 56				69 10 19 45		
22 11 33 7 3		3 40 0 72				69 21 10 67		
29 10 55 21 1		3 29 41 83				69 37 30 65		
30 10 50 2 1		3 28 21 22				69 39 53 82		
Dec 4 10 29 24 7		3 23 26 32				69 48 30 14		

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF MARS (Continued)

M	S	Time	f	P int Ob	A R f m	A. R f m	Err	f N A	P int Ob	N P D fr m	N P D	Err	f N A
Ob	t			d	Ob	ti			rved	Ob	rv ti		
1832													
De	5	10	24	22 1	C	3 22 19 79			C	69 50 34 08			
	6	10	19	25 4		3 21 16 19				69 52 24 00			
	7	10	14	26 4		3 20 15 58				69 54 10 64			
	12	9	50	33 2		3 16 1 14				70 1 25 87			
	13	9	45	56 4		3 15 20 07				70 2 33 21			
	14	9	41	22 6		3 14 42 37							
	15	9	36	52 7		3 14 8 21				70 4 12 89			
	16	9	31	25 8		3 13 37 59				70 4 49 67			
	17	9	28	2 4		3 13 10 02				70 5 20 30			
	18	9	23	43 9		3 12 46 30				70 5 38 38			
	20	9	15	14 0		3 12 9 63				70 5 47 61			
	21	9	11	4 4		3 11 55 05				70 5 34 88			
	22	9	6	58 5		3 11 44 72				70 5 18 15			
	24	8	58	56 0		3 11 34 27				70 4 8 73			
	25	8	54	59 8		3 11 33 84				70 3 17 91			
	26	8	51	6 4		3 11 36 93							
	27	8	47	17 3		3 11 43 82				70 1 12 01			
1833													
Jan	3	8	21	55 3		3 13 53 40				69 48 43 63			
	4	8	18	29 7		3 14 23 77				69 46 21 63			
	6	8	11	36 2		3 15 32 14				69 41 12 74			
	8	8	5	13 4		3 16 51 16				69 35 33 28			
	9	8	2	0 8		3 17 34 74				69 32 32 24			
	10	7	58	50 8		3 18 20 72				69 29 23 11			
	11	7	55	33 2		3 19 9 19				69 26 9 80			
	14	7	46	22 3		3 21 47 53				69 15 50 26			
	15	7	43	36 2		3 22 46 07				69 12 10 17			
	16	7	40	39 5		3 23 45 24				69 8 24 21			
	17	7	37	45 6		3 24 47 60				69 4 36 01			
	18	7	34	55 0		3 25 53 42				69 0 40 54			
	19	7	32	4 7		3 26 59 25				68 56 41 03			
	20	7	29	16 6		3 28 7 41				68 52 36 80			
	21	7	26	31 5		3 29 18 26				68 48 28 30			
	22	7	23	48 0		3 30 31 96				68 44 13 84			
	23	7	21	6 9		3 31 45 70				68 39 58 13			
	24	7	18	27 4		3 33 2 06				68 35 37 21			
	25	7	15	48 6		3 34 19 89							
	27	7	10	38 3		3 37 1 80				68 22 17 84			
	28	7	8	6 2		3 38 25 74				68 17 47 49			
	29	7	5	35 3		3 39 50 97				68 13 14 35			
	30	7	3	6 2		3 41 17 88				68 8 37 65			
	31	7	0	38 4		3 42 46 30				68 4 0 24			
Feb	1	6	58	12 0		3 44 16 10				67 59 22 00			
	2	6	55	48 1		3 45 48 49				67 54 43 49			
	4	6	51	3 7		3 48 56 47				67 45 20 00			
	5	6	48	44 3		3 50 33 10				67 40 39 23			
	6	6	46	25 3		3 52 10 38				67 35 57 40			
	8	6	41	52 6		3 55 28 75				67 26 33 99			
	9	6	39	37 6		3 57 11 35				67 21 53 41			
	10	6	37	24 9		3 58 54 05				67 17 12 48			
	11	6	35	12 1		4 0 37 96				67 12 34 34			
	12	6	33	1 6		4 2 23 97				67 7 57 00			
	13	6	30	52 3		4 4 10 84				67 3 20 67			
	14	6	28	43 6		4 5 58 07				66 58 44 56			
	15	6	26	36 6		4 7 47 23				66 54 11 23			
	16	6	24	30 8		4 9 37 51				66 49 38 66			
	17	6	22	26 0		4 11 29 21				66 45 8 52			
	18	6	20	22 4		4 13 21 71				66 40 45 65			

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF MARS (Continued)

Mars lat T m f	P int Ob	A R f r m	A R f m	Erro f N A	P i t Ob	N P D f m	N P D	Err f N A
Ob rv ti	er d	Ob rv ti	N A		d	Ob rv ti	f m N A	
1833		m						
Feb 4	C				C	66 14 58 14		
25 6 6 27 0		4 27 0 06				66 10 52 67		
26						66 6 48 68		
27 6 2 37 2		4 31 2 83						
28 6 0 44 5		4 33 6 37				65 58 56 62		
Mar 1 5 58 50 9		4 35 8 99				65 55 6 90		
2 5 56 58 9		4 37 13 45				65 51 20 58		
3 5 55 8 0		4 39 18 88				65 47 39 92		
4 5 53 18 1		4 41 24 94				65 44 2 87		
6 5 49 40 2		4 45 40 64				65 37 6 81		
7 5 47 52 5		4 47 47 88				65 33 45 07		
8 5 46 5 7		4 49 57 05				65 30 30 50		
9 5 44 19 1		4 52 7 11				65 27 22 64		
10 5 42 33 5		4 54 17 97				65 24 15 99		
1835								
F b 1 9 29 22 1		6 13 57 31	56 58	-0 73		62 49 49 91	38 57	-11 31
2 9 25 1 9		6 13 30 57	29 97	-0 60		62 50 54 06	40 63	-13 13
4 9 16 27 5		6 12 47 79	47 63	-0 16		62 53 5 59	54 37	-11 22
5 9 12 13 6		6 12 31 50	31 81	+0 31		62 54 17 61	5 60	-12 01
7 9 4 1 7		6 12 10 99	10 72	-0 27		62 56 46 16	35 47	-10 69
10 8 52 2 3		6 12 4 82	4 79	-0 03		63 0 50 39	36 42	-13 97
11 8 48 15 9		6 12 9 59	9 50	-0 09		63 2 13 32	0 66	-12 66
12 8 44 29 2		6 12 17 62	17 43	-0 19		63 3 38 30	26 58	-11 72
13 8 40 44 5		6 12 28 87	28 58	-0 29		63 5 5 91	54 18	-11 73
14 8 37 1 3		6 12 42 59	42 88	+0 29		63 6 32 86	23 37	-9 49
M r 9 7 24 27 6		6 30 38 54	38 39	-0 15		63 48 25 11	19 5	-5 36
1836								
J ly 18 20 40 19 2		4 28 9 90	9 54	-0 36		68 28 43 84	40 88	-2 96
19 20 39 19 2		4 31 4 83	4 55	-0 28		68 21 39 63	35 68	-3 95
Aug 26 19 58 22 0		6 19 50 07	50 04	-0 03				
Sept 9 19 41 7 5		6 57 44 13	43 56	-0 57		66 39 53 01	45 97	-7 04
11 19 38 30 3		7 2 59 07	59 29	+0 22		66 45 18 89	14 37	-4 62
12 19 37 11 4		7 5 36 35	36 36	+0 01		66 48 20 05	11 27	-8 78
13 19 35 49 6		7 8 12 34	12 68	+0 34		66 51 23 29	16 44	-6 8
Oct 13 18 50 10 4		8 20 41 18	41 07	-0 11		69 14 54 67	51 15	-3 52
14 18 48 26 1		8 22 52 91	53 01	+0 10				
1837								
Jan 26 13 16 43 4		9 40 18 18	18 00	-0 18		71 19 40 66	27 27	-13 39
27 13 11 22 4		9 38 53 01	52 46	-0 55		71 11 34 19	20 36	-13 83
28 13 5 58 4		9 37 25 45	25 09	-0 36		71 3 25 11	13 01	-12 10
29 13 0 34 3		9 35 56 24	56 00	-0 24		70 55 18 77	6 16	-12 61
31 12 49 40 2		9 32 53 67	53 26	-0 41		70 39 10 30	58 05	-12 25
Feb 2 12 38 42 2		9 29 46 43	45 62	-0 81		70 23 16 77	4 89	-11 88
3 12 33 10 5		9 28 10 84	10 45	-0 39		70 15 28 58	16 15	-12 43
4 12 27 38 4		9 26 35 03	34 55	-0 48		70 7 46 37	34 13	-12 24
5 12 22 6 5		9 24 58 66	58 21	-0 45		70 0 12 74	59 91	-12 83
6 12 16 34 7		9 23 22 17	21 58	-0 59		69 52 47 42	34 52	-12 90
7 12 11 2 9		9 21 45 46	44 83	-0 63		69 45 30 97	18 76	-12 21
8 12 5 30 5		9 20 8 44	8 24	-0 20		69 38 25 21	14 00	-11 21
9 11 59 58 1		9 18 32 49	31 90	-0 59		69 31 32 95	20 42	-12 53
10 11 54 27 3		9 16 56 68	56 08	-0 60		69 24 50 48	38 84	-11 64
11 11 48 56 6		9 15 21 48	20 93	-0 55		69 18 21 89	10 08	-11 81
12 11 43 26 6		9 13 47 21	46 68	-0 53		69 12 7 04	54 80	-12 24

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF MARS (Continued)

M S i T i m f	P i n t O b	A R f r o m	A R f r m	E r r f N A	P i t O b	N P D f m	N P D	E r r f N A
O b s r v t i	r v e d.	O b r v t i	N A.		d	O b t i	f m N A	
1837		m						
F b 13 11 37 57 8	C	9 12 13 99	13 50	— 0 49	C	69 6 4 32	53 53	— 10 79
14 11 32 29 6		9 10 41 96	41 46	— 0 50		69 0 16 43	6 62	— 9 81
15 11 27 37		9 9 11 37	10 83	— 0 54		68 54 46 48	34 89	— 11 59
17 11 16 14 4		9 6 14 73	14 40	— 0 33		68 44 27 85	17 65	— 10 20
18 11 10 53 8		9 4 49 42	48 87	— 0 55		68 39 41 15	32 51	— 8 64
19 11 5 34 7		9 3 25 69	25 19	— 0 50		68 35 12 55	3 14	— 9 41
26 10 29 25 9		8 54 46 47	45 70	— 0 77		68 11 27 89	17 86	— 10 03
27 10 24 25 6		8 53 42 33	42 05	— 0 28		68 9 8 35	59 37	— 8 98
28 10 19 29 8		8 52 42 18	41 30	— 0 88		68 7 6 40	56 96	— 8 44
M r 1 10 14 36 1		8 51 44 21	43 53	— 0 68		68 5 18 11	10 54	— 7 57
4 10 0 14 5		8 49 9 21	8 60	— 0 61		68 1 32 18	24 90	— 7 28
5 9 55 32 8		8 48 23 88	23 20	— 0 68		68 0 47 20	40 27	— 6 93
6 9 50 54 5		8 47 41 62	41 11	— 0 51		68 0 16 99	10 26	— 6 73
7 9 46 20 1		8 47 2 73	2 21	— 0 2		68 0 1 08	54 73	— 6 35
8 9 41 48 7		8 46 27 11	26 52	— 0 59		68 0 0 06	53 65	— 6 41
9 9 37 20 4		8 45 54 54	54 11	— 0 43		68 0 12 46	6 69	— 5 77
10 9 32 55 6		8 45 25 53	24 88	— 0 65		68 0 39 97	33 68	— 6 29
11 9 28 33 5		8 44 59 53	58 98	— 0 55		68 1 20 09	14 53	— 5 56
12 9 24 15 6		8 44 36 94	36 34	— 0 60		68 2 1 16	8 72	— 6 44
13 9 19 59 8		8 44 17 53	16 93	— 0 60		68 3 22 18	15 97	— 6 21
16 9 7 33 6		8 43 38 65	37 87	— 0 78		68 7 56 12	52 49	— 3 63
17 9 3 30 7		8 43 31 69	31 13	— 0 56		68 9 53 01	48 57	— 4 44
18 8 59 31 2		8 43 28 16	27 43	— 0 73		68 12 1 28	56 16	— 5 12
1838								
Sept 28 20 17 59 1		8 47 42 56	4 60	+ 0 04		70 53 23 58	18 30	— 5 28
Oct 4 20 8 5 7		9 2 16 04	16 27	+ 0 23		71 47 41 71	36 64	— 0 7
7 20 4 15 6		9 9 25 42	25 41	— 0 01		72 15 55 43	49 45	— 5 98
1839								
Feb 12 14 34 38 0		12 3 33 24	32 95	— 0 29		86 15 10 28	10 37	+ 0 09
13 14 30 8 1		12 2 59 35	59 15	— 0 20		86 10 17 93	17 38	— 0 55
14		12 2	22 44			86 5 10 16	8 17	— 1 99
16		12 1	0 28			85 54 4 91	2 58	— 2 33
17		12 0	14 92			85 48 8 64	6 96	— 1 68
18		11 59	26 73			85 41 57 54	56 87	— 0 67
19 14 2 9 8		11 58 36 07	35 80	— 0 27		85 35 34 35	32 83	— 1 52
20 13 57 20 1		11 57 42 27	42 17	— 0 10		85 28 57 02	55 26	— 1 76
21		11 56	45 88			85 22 3 82	4 81	+ 0 99
23 13 42 36 4		11 54 45 59	45 52	— 0 07		85 7 49 31	47 40	— 1 91
24 13 37 36 5		11 53 41 57	41 60	+ 0 03		85 0 22 19	21 79	— 0 40
25 13 32 34 7		11 52 35 52	35 30	— 0 22		84 52 47 84	45 88	— 1 96
26		11 51	26 72			84 45 1 29	0 38	— 0 91
27 13 22 23 8		11 50 16 15	15 92	— 0 23		84 37 6 33	6 05	— 0 28
28		11 49	3 02			84 29 2 65	3 69	+ 1 04
Mar 1 13 12 6 3		11 47 48 44	48 14	— 0 30		84 20 53 03	54 24	+ 1 21
2 13 6 52 2		11 46 31 35	31 37	+ 0 02		84 12 38 66	38 44	— 0 22
3 13 1 38 0		11 45 12 92	12 72	— 0 20		84 4 16 05	17 33	+ 1 28
5 12 51 5 1		11 42 30 90	30 91	+ 0 01		83 47 21 79	22 63	+ 0 84
6 12 45 45 5		11 41 7 73	7 57	— 0 16		83 38 49 71	50 99	+ 1 28
7 12 40 17 7		11 39 43 44	43 15	— 0 29		83 30 18 34	17 78	— 0 56
8 12 34		11 38	17 58			83 21 41 38	44 06	+ 2 68
9 12 29 42 3		11 36 51 29	51 07	— 0 22		83 13 9 84	10 84	+ 1 00
10 12 24 19 4		11 35 24 06	23 78	— 0 28		83 4 37 71	39 41	+ 1 70
11 12 18 56 4		11 33 56 04	55 82	— 0 22		82 56 8 91	10 72	+ 1 81
12 12 13 30 7		11 32 27 6	27 44	— 0 32		82 47 44 67	45 89	+ 1 22
13 12 8 6 9		11 30 59 10	58 72	— 0 38		82 39 25 01	26 08	+ 1 07
14 12 2 43 0		11 29 30 19	29 92	— 0 27		82 31 10 75	12 40	+ 1 65

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF MARS (Cont. used)

M S lar Tim f				P intOb d	A R f m		A R f m	Err f N A	P intOb rv d	N P D f m		N P D	Err f N A		
Ob t l					Ob t l n.		N A			f m N A					
1839															
M	15	11	57	183	C	11 28	1 51	1 13	— 0 38	C	82 23	2 95	5 81	+ 2 86	
	16	11	51	54 4		11 26	32 95	32 60	— 0 35		82 15	5 27	7 34	+ 2 07	
	17	11	46	30 3		11 25	4 66	4 45	— 0 21		82 7	16 43	17 99	+ 1 56	
	18	11	41	7 2		11 23	37 27	36 87	— 0 40		81 59	36 14	38 78	+ 2 64	
	19	11	35			11 22		10 03			81 52	7 23	10 65	+ 3 42	
	21	11	24			11 19		19 21			81 37	47 36	50 89	+ 3 53	
	22	11	19	42 8		11 17	55 61	55 53	— 0 08		81 30	56 72	0 88	+ 4 16	
	23	11	14	25 2		11 16	33 62	33 24	— 0 38		81 24	22 22	25 16	+ 2 94	
	24	11	9	8 8		11 16	12 80	12 42	— 0 38		81 18	1 40	4 21	+ 2 81	
	25	11	3	53 6		11 13	53 52	53 24	— 0 28		81 11	55 46	58 79	+ 3 33	
	26	10	58	40 6		11 12	35 96	5 79	— 0 17		81 6	5 97	9 17	+ 3 20	
	27	10	53	29 6		11 11	20 64	20 21	— 0 43		81 0	34 06	35 82	+ 1 76	
	28	10	48	20 3		11 10	6 84	6 64	— 0 20		80 55	14 37	19 21	+ 4 84	
	29	10	43	12 8		11 8	55 33	55 10	— 0 23		80 50	19 77	19 83	+ 0 06	
	30	10	38	7 8		11 7	46 04	45 80	— 0 24		80 45	36 64	37 91	+ 1 27	
	31	10	33	5 2		11 6	39 19	38 79	— 0 40		80 41	11 27	13 78	+ 2 51	
April	1	10	28			11 5		34 13				80 37	5 75	7 47	+ 1 72
	2	10	23	6 7		11 4	32 19	31 90	— 0 29			80 33	16 77	19 39	+ 2 62
	3	10	18	11 1		11 3	32 33	32 18	— 0 15			80 29	46 89	49 57	+ 2 68
	4	10	13	18 3		11 2	35 39	35 03	— 0 36			80 26	34 41	38 10	+ 3 69
	5	10	8	27 8	11 1	40 80	40 52	— 0 28		80 23	41 12	45 21	+ 4 09		
	6	10	3	40 4	11 0	49 02	48 72	— 0 30		80 21	6 80	10 87	+ 4 07		
	7	9	58	55 9	11 0	0 08	59 66	— 0 42	"	80 18	51 46	55 27	+ 3 81		
	8	9	54	13 6	10 59	13 81	13 41	— 0 40		80 16	56 33	58 35	+ 2 02		
	13	9	31	26 6	10 58	5 66	5 34	— 0 32		80 11	48 34	53 57	+ 5 23		
	14	9	27	1 7	10 55	36 86	36 51	— 0 35		80 11	42 84	44 79	+ 1 95		
	15	9	22	40 3	10 55	10 98	10 66	— 0 32		80 11	55 68	0 71	+ 5 03		
	16	9	18		10 54	48 02	47 75	— 0 27		80 12	26 58	31 54	+ 4 96		
	17	9	14	5 7	10 54	28 17	27 80	— 0 37		80 13	15 79	20 20	+ 4 41		
	18	9	9	53 1	10 54	11 31	10 81	— 0 50	"	80 14	22 76	26 43	+ 3 67		
	19	9	5	43 0	10 53	57 18	56 74	— 0 44		80 15	47 39	50 14	+ 2 7		
	20	9	1	36 2	10 53	46 13	45 59	— 0 54		80 17	27 52	30 90	+ 3 38		
	25	8	41	43 2	10 53	32 80	32 30	— 0 50		80 29	56 16	1 30	+ 5 14		
My	20	7	17	33 0	11 7	42 56	42 06	— 0 50		82 58	27 54	31 66	+ 4 12		
	21	7	14	37 4	11 8	42 94	42 58	— 0 36		83 6	52 25	57 68	+ 5 43		
1841															
Mar	18	14	32							101 12	28 97	38 08	+ 9 11		
	19	14	27							101 11	1 98	7 66	+ 5 68		
	21	14	18							101 7	19 87	28 17	+ 8 30		
	22	14	14							101 5	11 66	19 19	+ 7 53		
	23	14	9							101 2	50 15	57 51	+ 7 36		
	25	14	0							100 57	27 76	36 70	+ 8 94		
	27	13	51							100 51	16 13	26 69	+ 10 56		
	28	13	46							100 47	51 22	62 70	+ 11 48		
	29	13	43							100 44	17 38	29 04	+ 11 66		
	30	13	36							100 40	29 10	42 95	+ 13 85		
April	1	13	27							100 32	25 91	37 39	+ 11 48		
	2	13	22	9 8	14 6	6 76	6 43	— 0 33		100 28	7 10	18 64	+ 11 54		
	3	13	17	8 7	14 5	1 40	1 03	— 0 37		100 23	38 34	49 58	+ 11 24		
	4	13	12	5 1	14 3	53 76	53 23	— 0 53		100 18	59 24	10 68	+ 11 44		
	7	12	56	41 2	14 0	17 35	16 66	— 0 69		100 4	3 89	18 75	+ 14 86		
	17	12	3	35 6	13 46	27 86	27 45	— 0 41		99 7	17 22	28 96	+ 11 74		
	18	11	58	11 4	13 44	59 67	59 19	— 0 48		99 1	13 19	28 41	+ 15 22		
	21	11	41	58 7	13 40	33 68	33 23	— 0 45		98 43	13 42	28 89	+ 15 47		
	22	11	36	34 6	13 39	5 38	4 80	— 0 58		98 37	18 04	32 79	+ 14 75		
	27	11	9	43 4	13 31	52 67	52 45	— 0 22		98 8	45 25	60 05	+ 14 80		

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF MARS (Continued)

M S lar T m f	P int Ob	A R f m	A R fr m	E f N A	P i t Ob	N P D fr m	N P D	Erro f N A
Ob rv tl	rv d	Ob tl	N A		d	Ob tl	f m N A	
1841								
My 5 10 27 58.3	C	13 21 32.72	32 54	— 0.18	C	97 30 13.07	28 11	+ 15.04
7 10 17 52.3		13 19 18.17	17 90	— 0.27		97 22 31.84	47 32	+ 15.48
June 10 7 55 35		13 10 8.98	8 57	— 0.41		97 52 33.22	57 69	+ 14.47
J ly 22 17 59 41.9		14 3 1.77						
A g 29 4 57 47.6		15 27 48.01						
30 4 56 26.9		15 30 23.73	23 60	— 0.13		110 43 9.20	64 81	+ 5.61
31 4 55 7.4		15 33 0.44	0 20	— 0.24		110 53 18.55	26 39	+ 7.84
Sept 9 4 43 53.5		15 57 13.76	13 60	— 0.16		112 12 7.83	16 46	+ 8.63
10 4 42 43.2		16 0 0.04	59 92	— 0.12		112 20 12.69	22 12	+ 9.43
14 4 38 12.0		16 11 14.78	14 39	— 0.39		112 51 10.22	14 67	+ 4.45
17 4 34 58.6		16 19 50.29	49 80	— 0.24		113 12 40.05	43 62	+ 3.57
20 4 31 52.6		16 28 33.28	33 08	— 0.20		113 32 30.77	39 88	+ 9.11
21 4 30 52.6		16 31 29.36	29 19	— 0.17		113 38 50.27	57 10	+ 6.83
23 4 28 54.1		16 37 24.11	23 86	— 0.25				
24 4 27 56.3		16 40 22.78	22 37	— 0.41		113 56 39.62	41 16	+ 1.54
25 4 26 59.2		16 43 22.09	21 66	— 0.43		114 2 8.49	12 70	+ 4.21
Oct 6 4 17 17.6		17 17 0.58	0 26	— 0.32		114 49 11.75	14 80	+ 3.05
7 4 16 28.3		17 20 7.96	7 61	— 0.34				
15 4 10 15.0		17 45 27.02	26 65	— 0.37				
16 4 9 31.4		17 48 39.47	38 76	— 0.71				
19 4 7 21.2		17 58 17.97	17 63	— 0.34				
Nov 16 3 48 30.4		19 29 48.20	47 80	— 0.40				
17 3 47 50.3		19 33 4.57	3 98	— 0.59				
18 3 47 10.3		19 36 20.80	20 02	— 0.78				
19 3 46 30.5		19 39 36.63	35 91	— 0.72				
20 3 45 48.6		19 42 52.22	51 54	— 0.68				
22 3 44 26.6		19 49 22.96	22 19	— 0.77				
23 3 43 44.7		19 52 37.46	37 17	— 0.29				
Dec 8 3 30 39.6		20 40 45.24	43 95	— 1.29				
1842								
M 26 1 37 44.5		1 51 13.23	12 72	— 0.51				
1843								
My 7 14 22 23.6		17 22 38.52	37 43	— 1.09		114 5 48.54	6 9.18	+ 20.64
8 14 18 16.5		17 22 22.99	22 19	— 0.80		114 8 43.74	9 5.11	+ 21.37
9 14 14 0.8		17 22 4.36	3 66	— 0.70		114 11 43.66	12 0.72	+ 17.06
11 14 5 22.0		17 21 17.46	16 66	— 0.80		114 17 28.80	50 34	+ 21.54
12 14 0 57.0		17 20 48.93	48 22	— 0.71		114 20 21.63	43 97	+ 22.34
14 13 52 1.4		17 19 42.19	41 42	— 0.77		114 26 6.00	27 95	+ 21.95
30 12 32 58.6		17 3 33.17	31 97	— 1.20		115 5 12.52	38 19	+ 25.67
31 12 27 41.8		17 2 11.96	10 75	— 1.21		115 6 59.93	7 25.45	+ 25.52
June 2 12 17 3.1		16 59 24.69	23 53	— 1.16		115 10 19.54	41 22	+ 21.68
8 11 44 35.3		16 50 40.61	39 32	— 1.29		115 17 26.05	49 06	+ 23.01
9 11 39 20.6		16 49 12.07	10 76	— 1.31		115 18 12.30	36 98	+ 24.68
10 11 33 56.9		16 47 43.84	42 41	— 1.43		115 18 52.36	19 18.33	+ 25.97
17			45 52			115 20 57.50	21 21.07	+ 23.57
21 10 35 48.4		16 32 37.98	36 82	— 1.16		115 20 23.94	47 96	+ 24.02
24 10 20 24.3		16 29 10.80	9 44	— 1.36		115 19 29.32	52 92	+ 23.60
27 10 5 34.7		16 26 8.48	7 56	— 0.92		115 18 22.04	46 53	+ 24.49
28 10 0 43.9		16 25 14.26	13 10	— 1.16		115 18 2.47	23 74	+ 21.27
Aug 3 7 45 44.9		16 31 48.82	48 06	— 0.76		115 42 33.08	48 30	+ 15.22

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF MARS (*C i ed*)

M an Solar Tim f	P i t Ob	A R f r m	A R f m	Err f N A	P i t Ob	N P D f r m	N P D	Err f N A
Ob t t	rved.	Ob r v t t n.	N A		r v d	Ob lo	f m N A	
1843								
A g 7 7 35 74	C	16 36 55 49	54 87	-0 62	C	115 50 10 04	24 13	+ 14 09
13 7 20 185		16 45 54 32	53 52	-0 80		116 2 2 01	13 90	+ 11 89
14 7 18 106		16 47 32 66	31 80	-0 86		116 3 57 68	11 42	+ 13 74
23 6 59 92		17 3 56 38	55 90	-0 48		116 20 16 32	27 25	+ 10 93
1844								
Dec 5 20 56 37 0		13 56 43 05	42 44	-0 61		100 58 20 12	21 89	+ 1 77
9 20 50 39 4		14 6 29 48	29 17	-0 31		101 52 20 34	21 03	+ 0 69
1845								
Jan 5 20 12 8 6		15 14 20 52	19 98	-0 54		107 17 56 73	58 20	+ 1 47
6			54 68			107 28 27 77	29 87	+ 2 10
9 20 6 45 0		15 24 41 40	40 68	-0 72		107 59 18 96	20 36	+ 1 40
10 20 5 19 8		15 27 17 04	16 52	-0 52		108 9 20 81	21 81	+ 1 00
12 20 2 43 4		15 32 29 59	29 02	-0 57		108 29 0 39	1 25	+ 0 86
14 20 0 7 5		15 37 43 20	42 56	-0 64		108 48 4 92	8 76	+ 3 84
15 19 58 45 2		15 40 20 32	19 74	-0 58		108 57 27 22	31 31	+ 4 09
23 19 48 21 5		16 1 27 03	26 36	-0 67		110 7 17 14	21 61	+ 4 47
24 19 47 4 4		16 4 6 26	5 84	-0 42		110 15 22 53	26 80	+ 4 27
26 19 44 31 5		16 9 25 79	25 52	-0 27		110 31 5 29	10 64	+ 5 35
28 19 41 59 5		16 14 46 75	46 25	-0 50		110 46 14 09	18 26	+ 4 17
30 19 39 28 3		16 20 8 29	7 73	-0 56		111 0 46 86	49 48	+ 2 62
F b 4 19 33 14 2		16 33 35 59	35 09	-0 50				
9 19 27 4 1		16 47 7 14	6 70	-0 44		112 4 3 17	4 99	+ 1 82
11 19 24 37 1		16 52 32 61	32 29	-0 32		112 14 46 04	48 94	+ 2 90
12 19 23 23 7		16 55 15 65	15 28	-0 37		112 19 52 74	56 30	+ 3 56
13 19 22 10 7		16 57 58 99	58 34	-0 65		112 24 49 45	53 87	+ 4 42
14 19 20 51 8		17 0 42 09	41 55	-0 54		112 29 35 98	41 62	+ 64
18 19 16 5 7		17 11 35 75	35 27	-0 48		112 47 7 23	13 84	+ 6 61
19 19 14 52 6		17 14 19 73	18 90	-0 83		112 51 5 85	12 04	+ 6 19
20 19 13 40 6		17 17 3 28	2 64	-0 64		112 54 55 07	60 33	+ 5 26
21 19 12 28 0		17 19 47 23	46 41	-0 82		112 58 33 28	38 66	+ 5 38
23 19 10 2 8		17 25 14 91	14 15	-0 76		113 5 21 57	25 25	+ 3 68
24 19 8 50 4		17 27 58 85	58 13	-0 72		113 8 26 79	33 69	+ 6 90
25 19 7 38 2		17 30 42 70	42 06	-0 64		113 11 26 39	32 02	+ 5 63
26 19 6 25 4		17 33 26 61	26 04	-0 57		113 14 14 27	20 40	+ 6 13
Mar 2 19 1 35 7		17 44 22 43	21 94	-0 49		113 23 49 01	54 10	+ 5 09
3 19 0 23 7		17 47 6 51	5 82	-0 69		113 25 45 40	52 72	+ 7 32
5 18 57 58 6		17 52 34 18	33 47	-0 71		113 29 14 77	20 23	+ 5 46
6 18 56 45 9		17 55 17 84	17 17	-0 67				
7 18 55 33 0		17 58 1 41	0 77	-0 64		113 31 59 81	68 32	+ 8 1
9 18 53 7 0		18 3 28 30	27 63	-0 67		113 34 10 47	17 23	+ 6 76
10 18 51 54 1		18 6 11 49	10 91	-0 58		113 35 0 05	7 10	+ 7 0
11 18 50 40 6		18 8 54 72	54 02	-0 70		113 35 41 85	47 31	+ 5 46
12 18 49 26 9		18 11 37 79	36 98	-0 81		113 36 9 18	17 89	+ 8 71
18 18 42 3 3		18 27 51 93	51 19	-0 74		113 35 53 56	61 52	+ 7 96
20 18 39 34 1		18 33 15 16	14 40	-0 76		113 34 34 84	41 21	+ 6 37
23 18 35 58 0		18 41 18 14	17 54	-0 60		113 31 24 20	32 22	+ 8 02
24 18 34 31 9		18 43 58 76	58 12	-0 64		113 30 2 52	11 21	+ 8 69
26 18 31 59 8		18 49 19 16	18 48	-0 68		113 26 54 83	62 83	+ 8 00
31 18 25 33 5		19 2 34 75	34 17	-0 58		113 16 34 42	41 62	+ 7 20
April 1 18 24 15 8		19 5 12 74	12 31	-0 43		113 14 3 76	12 63	+ 8 87
July 22 14 16 59 6			50 33			106 59 39 39	52 71	+ 13 32
25 14 4 43 3		22 18 21 78	21 80	+ 0 02		107 13 4 97	18 46	+ 13 49
26 14 0 31 3		22 18 5 94	5 99	+ 0 05		107 18 0 13	10 27	+ 10 14
27 13 56 16 6		22 17 47 00	47 09	+ 0 09		107 23 0 48	12 74	+ 12 26
31 13 37 41 1		22 16 1 27	1 30	+ 0 03		107 44 42 97	55 32	+ 13 35

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF MARS (*Contd*)

M a n S l T m f				P i n O b	A R f m		A R f m	E f N A	P t O b	N P D f r m		N P D	Err f N A			
O b i				d	O b t i		N A		r v d	O b i		f m N A				
1845																
A g	1	13	34	186	C	2	15	27 77	27 56	—0 21	C	107	50	27 64	39 92	+ 12 28
	7	13	6	269		22	11	10 52	10 63	+ 0 11		108	26	19 06	29 89	+ 10 83
	8	12	56	461		22	10	19 74	19 80	+ 0 06		108	32	21 33	31 81	+ 10 48
	12	12	42	164		22	6	38 84	38 69	—0 15		108	55	59 45	56 870	+ 9 25
	16	12	22	319		22	2	36 42	36 57	+ 0 15		109	17	55 83	18 490	+ 9 07
	21	11	57	365		21	57	20 58	20 48	—0 10		109	41	25 32	33 42	+ 8 10
	23	11	47	388		21	55	14 26	14 29	+ 0 03		109	49	14 46	20 72	+ 6 26
	26	11	32	467		21	52	9 70	9 75	+ 0 05		109	58	54 10	59 68	+ 5 58
	27	11	27	514		21	51	10 21	10 23	+ 0 02		110	1	31 41	37 48	+ 6 07
	28	11	22	572		21	50	11 99	11 96	—0 03		110	3	51 15	56 86	+ 5 71
	29	11	18	48		21	49	15 23	15 21	—0 02		110	5	52 36	57 27	+ 4 91
	30	11	13	139		21	48	20 12	20 09	—0 03		110	7	31 76	38 28	+ 6 51
	31	11	8	249		21	47	26 75	26 76	+ 0 01		110	8	54 22	59 39	+ 5 17
	Sept	2	10	58		525		21	45	46 11		46 13	+ 0 02		110	10	36 73	41 47	+ 4 74
10		10	22	228		21	40	43 42	43 01	—0 41		110	3	53 09	55 14	+ 20
11		10	18	18		21	40	17 90	17 85	—0 05		110	1	34 19	34 52	+ 0 33
12		10	13	438		21	39	55 90	55 74	—0 16		109	58	54 69	54 94	+ 02
13		10	9	289		21	39	36 83	36 73	—0 10		109	55	56 05	56 59	+ 0 51
14		10	5	174		21	39	20 92	20 80	—0 12		109	52	40 12	39 77	—0 30
15		10	1	82		21	39	8 16	7 97	—0 19		109	49	3 64	4 85	+ 1 21
17		9	53	03		21	38	51 91	51 65	—0 26		109	41	2 45	2 10	—03
19		9	45	45		21	38	47 62	47 77	+ 0 15		109	31	51 33	50 93	—0 40
20		9	41	114		21	38	50 71	50 49	—0 22		109	26	51 82	50 62	—1 20
22		9	33	339		21	39	5 41	5 22	—0 19		109	16	0 89	1 72	+ 0 83
24		9	26	91		21	39	32 35	32 23	—0 12		109	4	10 23	10 63	+ 0 40
25		9	22	141		21	39	50 58	50 28	—0 30		108	57	53 93	52 37	—1 56
27		9	15	247		21	40	35 62	35 40	—0 22		108	44	84 58	31 81	—2 77
28	9	11	540		21	41	2 26	2 42	+ 0 16		108	37	33 44	30 15	—3 29	
29	9	8	299		21	41	32 58	32 36	—0 22		108	30	16 06	14 50	—1 6	
30	9	5	83		21	42	5 15	5 16	+ 0 01		108	22	47 79	45 21	—2 58	
Oct	1	9	1	453	I L	21	42	41 26	40 85	—0 41		108	15	6 15	2 46	—3 69
	2	8	58	274		21	43	19 35	19 35	0 00		108	7	8 98	6 64	—2 34
	3	8	55	128		21	44	0 70	0 61	—0 09	C	107	59	1 29	58 57 93	—3 36
	5	8	48	513		21	45	31 21	31 23	+ 0 02		107	42	6 35	3 06	—3 29
	6	8	45	447		21	46	20 58	20 50	—0 08		107	33	19 76	17 45	—2 31
	7	8	42	406		21	47	12 51	12 33	—0 18		107	24	21 56	20 18	—1 38
	8	8	39	386		21	48	6 77	6 65	—0 12		107	15	14 50	11 47	—3 03
	9	8	36	393		21	49	3 56	3 41	—0 16		107	5	54 31	51 60	—2 71
	11	8	30	508		21	51	4 28	3 96	—0 32		106	46	42 28	39 46	—2 82
	15	8	19	318		21	55	31 85	31 63	—0 22		106	6	15 38	11 96	—3 42
	16	8	17	473		21	56	44 01	43 74	—0 27		105	55	44 48	40 83	—3 60
	17	8	14	49		21	57	58 05	57 77	—0 28		105	45	5 26	0 40	—4 86
	20	8	6	99		22	1	51 30	51 12	—0 18		105	12	7 54	4 36	—3 18
	22	8	1	21		22	4	35 86	35 56	—0 30		104	49	28 33	22 99	—5 34
24	7	56	09	22	7	27 01	26 64	—0 37	104	26		11 59	7 78	—3 81		
25	7	53	324	22	8	54 88	54 68	—0 30	104	14		25 60	17 78	—7 82		
26	7	51	58	22	10	24 40	24 10	—0 30	104	2	24 09	19 53	—4 56			
27	7	48	407	22	11	55 39	55 11	—0 28	103	50	18 30	13 32	—4 98			
28	7	46	169	22	13	27 82	27 60	—0 22	103	38	2 80	37 59 23	—3 57			
30	7	41	341	22	16	36 82	36 87	+ 0 05	103	13	14 23	7 77	—6 46			
31	7	40	132	22	18	13 84	13 58	—0 26	103	0	37 83	30 68	—7 15			
Nov	1	7	37	570		22	19	51 90	51 61	—0 29		102	47	50 51	46 25	—4 26
	2	7	34	400		22	21	31 21	30 92	—0 29		102	34	59 91	54 55	—5 36
	3	7	32	243		22	23	11 62	11 50	—0 12		102	21	59 12	55 84	—3 28
	4	7	30	101		22	24	53 32	53 29	—0 03		102	8	54 19	50 13	—4 06
	5	7	27	569		22	26	36 55	36 26	—0 29		101	55	42 22	37 64	—4 58

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF MARS (Continued)

Mars	Time	Right Ascension	North Polar Distance	Right Ascension	North Polar Distance	Right Ascension	North Polar Distance	Right Ascension	North Polar Distance
Obs.	Obs.	Obs.	Obs.	Obs.	Obs.	Obs.	Obs.	Obs.	Obs.
1845									
N	6 7 25 44.8	I L	22 28 20 59	20 37	-0 22	C	101 42 21 96	18 37	- 3 59
	7 7 23 33.8		22 30 5 78	5 57	-0 21		101 28 55 67	2 75	- 2 92
	8 7 21 23.8		22 31 52 15	51 84	-0 31		101 15 23 74	20 75	- 2 99
	9 7 18 15.0		22 32 39 44	39 09	-0 35		101 1 45 68	42 47	- 3 21
	10 7 17 6.8		22 35 27 82	27 38	-0 44		100 48 2 06	47 8 33	- 3 73
	16 7 4 38.5		22 46 36 22	35 89	-0 33		99 23 38 60	34 70	- 3 90
	17 7 2 36.3		22 48 30 38	30 20	-0 18		99 9 1 47	12 30	- 3 17
	19 6 58 34.7		22 52 21 11	21 04	-0 07		98 40 16 14	12 77	- 3 37
	21 6 54 36.2		22 56 15 07	14 79	-0 28		98 10 58 33	3 98	- 4 35
	22 6 52 37.9		22 58 12 61	12 68	+ 0 07		97 56 12 07	7 82	- 4 25
	24 6 48 43.2			10 51			97 26 26 73	21 90	- 4 83
	26 6 44 51.2		23 6 11 24	10 92	-0 32		96 56 23 93	18 93	- 5 00
	27 6 42 56.1		23 8 12 61	12 08	-0 53		96 41 14 92	11 31	- 3 61
	29 6 39 7.6		23 12 16 62	16 23	-0 39		96 10 48 46	44 31	- 4 15
	30 6 37 14.2		23 13 19 44	19 15	-0 29		95 5 29 96	2 30	- 4 66
Dec	1 6 35 20.9		23 16 23 10	22 64	-0 46		9 40 8 63	2 56	- 6 07
	5 6 27 55.9		23 24 42 38	41 97	-0 41		94 38 04	37 9 33	- 5 71
	9 6 20 38.1		23 33 9 64	9 07	-0 57		93 35 15 17	10 7	- 4 60
	10 6 19 49.8		23 35 17 69	16 94	-0 75		93 19 28 49	22 45	- 6 04
	11 6 17 1.9		23 37 26 01	25 24	-0 77		93 3 37 64	32 09	- 6 55
1847									
Mar	5 20 20 0.2	C	19 12 54 64	54 32	-0 32		113 2 25 69	81 35	+ 5 66
	7 20 18 17.3		19 19 4 54	4 12	-0 42		112 53 13 36	20 20	+ 6 84
	8 20 17 25.7		19 22 9 44	8 84	-0 60		112 48 20 73	25 32	+ 4 59
	9 20 16 33.7		19 25 14 06	13 48	-0 58		112 43 9 64	17 63	+ 7 99
	10 20 15 41.8		19 28 18 15	17 91	-0 24		112 37 51 60	57 27	+ 5 67
	11 20 14 50.2		19 31 22 60	22 19	-0 41		112 32 16 28	24 29	+ 8 01
	12 20 13 57.6		19 34 26 78	26 31	-0 47		112 26 30 07	38 70	+ 8 68
	18 20 8 41.7		19 52 47 33	46 95	-0 38		111 47 37 50	46 00	+ 8 50
	19 20 7 45.9		19 55 49 73	49 51	-0 22		111 40 28 10	34 77	+ 6 67
	23 20 4 7.9		20 7 57 82	57 47	-0 35		111 9 42 80	2 06	+ 9 26
	26 20 1 21.9		20 17 0 95	0 59	-0 36		110 44 39 44	48 93	+ 9 49
	29 19 58 33.4		20 26 1 82	1 10	-0 72		110 17 57 82	18 5 33	+ 7 51
Apr	9 19 47 51.5		20 58 39 99	39 35	-0 64		108 26 27 04	35 3	+ 8 49
	11 19 45 50.5		21 4 31 73	31 05	-0 68		108 4 2 43	12 02	+ 9 59
May	4 19 22 49.9		22 12 7 79	7 23	-0 56		103 8 19 68	29 7	+ 9 89
	12 18 51 22.7		22 32 10 02	9 90	-0 12		101 12 36 16	46 15	+ 9 99
Jun	1 18 45 55.2		23 25 30 30	29 72	-0 58		96 8 6 24	17 63	+ 11 39

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE PLANET VESTA

1833									
July	7 11 58	C	19 0 52 12	36 97					
	8 11 53 42.3		18 59 34 28	36 39	+ 2 11				
1836									
Mar	11 12 52 13.5		12 10 9 52	11 72	+ 2 20	C	78 8 34 2	47 31	+ 12 79
	12 12 47 25.4		12 9 17 54	20 00	+ 2 46		78 0 33 59	46 00	+ 12 46
	13 12 42 37.5		12 8 25 60	27 59	+ 1 99		77 52 36 99	50 22	+ 13 23
	14 12 37 47.8		12 7 32 16	34 56	+ 2 40		77 44 47 91	0 47	+ 12 56
	15 12 32 59.2		12 6 38 42	40 93	+ 2 51		77 37 4 10	17 45	+ 13 35
	16 12 28 9.2		12 5 44 51	46 81	+ 2 30		77 29 27 80	41 70	+ 13 99
	17 12 23 19.1		12 4 49 77	52 31	+ 2 54		77 22 1 35	14 20	+ 12 90

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE PLANET VESTA (Continued)

M S lar Tum f	P int Ob	A R f m	A R fr m	E f N A	P i t Ob	N i D f m	N P D	E r t f N A
Ob i	d	Ob rv tl	N A		d	Ob rv i	f m N A	
1836		m						
Mar 20 12 8 47 4	C	12 2 5 05	7 15	+ 2 10	C	77 0 33 13	46 10	+ 12 97
21 12 3 55 6		12 1 9 40	11 86	+ 2 46		76 53 42 96	56 88	+ 13 92
22 11 59 4 5		12 0 14 29	16 58	+ 2 29		76 47 6 74	18 58	+ 11 84
25 11 44 31 8		11 57 28 87	31 66	+ 2 79		76 28 23 81	34 82	+ 11 01
26 11 39 42 1		11 56 34 76	37 24	+ 2 48		76 22 34 25	45 35	+ 11 10
28 11 30 3 0		11 54 47 25	49 75	+ 2 50		76 11 35 95	46 67	+ 10 72
29 11 25 14 5		11 53 54 11	56 72	+ 2 61		76 6 27 36	38 46	+ 11 10
Ap 1 1 11 10 52 0		11 51 19 30	21 91	+ 2 61		75 52 26 88	39 14	+ 12 26
2 11 6 6 5		11 50 29 37	31 86	+ 2 49		75 48 18 19	29 18	+ 10 99
5 10 51 55 1		11 49 5 02	7 52	+ 2 50		75 37 17 54	31 35	+ 13 81
6 10 47 13 1		11 47 19 16	21 47	+ 2 31		75 34 11 91	23 32	+ 11 41
7 10 42 32 3		11 46 34 11	36 60	+ 2 49		75 31 19 14	31 14	+ 12 00
8 10 37 5 2 7		11 45 50 56	52 90	+ 2 34		75 28 44 01	54 93	+ 10 92
9 10 33 14 5		11 45 8 05	10 46	+ 2 41		75 26 23 73	34 71	+ 10 98
10 10 28 37 5		11 44 26 92	29 33	+ 2 41		75 24 19 39	30 60	+ 11 21
11 10 24 1 7		11 43 47 05	49 55	+ 2 50		75 22 31 48	42 56	+ 11 08
12 10 19 27 9		11 43 8 74	11 18	+ 2 44		75 20 59 92	10 71	+ 10 79
13 10 14 55 0		11 42 31 72	34 24	+ 2 52		75 19 43 52	55 06	+ 11 54
14 10 10 23 8		11 41 56 42	58 81	+ 2 39		75 18 45 78	55 53	+ 9 75
15 10 5 53 9		11 41 22 3	24 89	+ 2 52		75 18 2 06	12 08	+ 10 02
16 10 1 26 4		11 40 50 35	52 54	+ 2 19		75 17 34 86	44 66	+ 9 80
17 9 56 59 6		11 40 19 39				75 17 22 50		
18 9 52 34 7		11 39 50 31				75 17 28 46		
19 9 48 11 4		11 39 22 77				75 17 47 67		
20 9 43 50 0		11 38 57 18				75 18 22 47		
22 9 35 15 2		11 38 10 77				75 20 20 49		
23 9 30 59 0		11 37 50 11				75 21 42 50		
26 9 18						75 27 16 51		
27 9 14 6 5		11 36 45 21				75 29 34 97		
28 9 9 59 1		11 36 33 34				75 32 8 00		
1837								
Aug 27 12 51 56 7		23 15 14 52	16 15	+ 1 63		106 3 37 20	20 31	— 16 89
28 12 47 9 6		23 14 22 13	24 39	+ 2 26		106 11 42 23	26 07	— 16 16
29 12 42 21 5		23 13 30 21	32 04	+ 1 83		106 19 43 53	26 88	— 16 65
Sept 13 11 29 41 5		22 59 56 73	58 61	+ 1 88		108 3 37 92	23 75	— 14 17
14 11 25 3 3		22 59 4 39	6 00	+ 1 61		108 9 8 16	53 01	— 16 16
21 10 51 45 4		22 53 16 73	18 74	+ 2 01		108 41 18 05	4 37	— 18 68
22 10 47 4 0		22 52 31 02	32 86	+ 1 84		108 44 57 82	44 55	— 13 27
23 10 42 23 6		22 51 46 33	48 09	+ 1 76		108 48 23 17	10 47	— 12 70
24 10 37 44 3		22 51 2 68	4 50	+ 1 82		108 51 34 51	21 97	— 12 54
27 10 24 12 6		22 48 59 38	0 98	+ 1 60		108 59 42 15	30 68	— 11 47
1838								
Dec 24		6 37 47 52						
29 12 0 57 6		6 32 2 70	2 69	— 0 01			56 12 00	
31 11 50 50 8		6 29 47 46	47 56	+ 0 10		67 48	52 33	
1839								
Jan 12 10 50 42 3		6 16 47 20	47 42	+ 0 22		67 6 46 87	7 6 94	+ 20 07
13 10 45 47 0		6 15 47 47	47 44	— 0 03		67 3 33 41	3 51 67	+ 18 26
17 10 26 15 0		6 11 59 27	59 47	+ 0 20		66 50 54 82	51 14 30	+ 19 48
18 10 21 25 6		6 11 5 62	5 78	+ 0 16		66 47 52 35	48 11 13	+ 18 78
19 10 16 38 6		6 10 13 53	13 59	+ 0 06		66 44 49 90	45 10 20	+ 20 30
1843								
Feb 8 12 31 49 3		9 44 46 42	47 90	+ 1 48		68 37 35 50	37 57 79	+ 22 29
9 12 25 54 2		9 42 47 04	48 36	+ 1 32		68 29 47 94	30 5 89	+ 17 95
10 12 20 58 8		9 41 47 31	48 51	+ 1 20		68 22 1 37	22 19 42	+ 18 05
11 12 16 2 6		9 40 46 77	48 40	+ 1 63		68 14 22 52	14 38 93	+ 16 41
13 12 6 10 6		9 38 46 11	47 73	+ 1 62		67 59 19 82	59 37 63	+ 17 81

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE PLANET VESTA (*C tnu d*)

M	S	lar	T	f	P	int	A	B	f	r	m	A	R	f	m	E	I	N	A	P	t	Ob	N	P	D	f	m	N	I	D	f	Err	I	N	A
Ob	rv	tl			rved		Ob	t			N A				N A					d		Ob	rv	tl			N A								
1843																																			
Feb	16	11	51	218	C		9	35	45	20	46 97		+ 1 77	C		67	37	4	94							38	2 26				+ 16 32				
	17	11	46	262			9	34	45	38	47 10		+ 1 72			67	30	51	74							31	7 34				+ 15 60				
	18	11	41	308			9	33	45	78	47 54		+ 1 76			67	24	6	43							24	21 6				+ 1 13				
	20	11	31	416			9	31	48	21	49 73		+ 1 52			67	11	3	32							11	18 84				+ 15 52				
	21	11	26	490												67	4	46	57							5	2 62				+ 16 05				
	22	11	21	556			9	29	52	75	54 18		+ 1 43			66	58	44	28							8	56 91				+ 12 63				
	23	11	17	27			9	28	56	12	57 55		+ 1 43			66	52	47	42							53	2 13				+ 14 71				
	24	11	12	109			9	28	0	17	1 55		+ 1 38			66	47	4	67							47	18 51				+ 13 84				
	25	11	7	200			9	27	5	12	6 54		+ 1 42			66	41	31	78							41	46 31				+ 14 53				
	27	10	57	417			9	25	17	89	19 48		+ 1 59			66	31	4	83							31	17 26				+ 12 43				
Mar	2	10	43	221			9	22	45	85	47 40		+ 1 55			66	16	50	36							17	4 77				+ 14 41				
	3	10	38	378			9	21	57	64	59 26		+ 1 62			66	12	34	18							12	45 47				+ 11 29				
	4	10	33	555			9	21	11	12	12 47		+ 1 35			66	8	25	20							8	38 82				+ 13 62				
	5	10	29	145			9	20	25	59	27 10		+ 1 51			66	4	30	41							4	44 88				+ 14 47				
	6	10	24	349			9	19	41	79	43 24		+ 1 45			66	0	49	66							1	3 63				+ 13 97				
	7															6	57	21	19							57	35 19				+ 14 00				
	8	10	16	203			9	19	18	99	20 18		+ 1 19			65	54	6	23							54	10 44				+ 13 21				
	10															65	48	14	23							48	26 07				+ 11 84				
1844																																			
J ly	23	12	18	30			20	24	28	62	32 14		+ 3 52			113	38		86							37	39 76				- 26 10				
	27	11	58	260			20	20	35	30	38 90		+ 3 60			111	6	28	17							6	4 86				- 23 31				
Aug	14	10	31	590			20	4	51	24	54 66		+ 3 42			115	49	6	58							48	49 01				- 17 57				
	16	10	22	459			20	3	29	62	32 75		+ 3 13			115	57	23	74							57	4 66				- 19 08				
	17	10	18	111			20	2	50	83	54 21		+ 3 38			116	1	16	54							0	57 13				- 19 41				
	19	10	9	79			20	1	39	00	42 22		+ 3 22			116	8	25	05							8	11 41				- 13 64				
	24	9	47	04			19	59	10	68						116	23	38	10																
	26	9	38	235			19	58	24	35						116	28	32	00																
1845																																			
Nov	27	12	14	53			4	40	17	96	18 49		+ 0 53			74	27										31	48							
	29	12	4	39			4	38	6	45	7 94		+ 1 49			4	27	26	25								43	41				+ 17 16			
Dec	4	11	38	577			4	32	38	26	39 53		+ 1 27			74	27	8	70								2	00				+ 16 80			
	17	10	34	276			4	19	12	30	13 31		+ 1 01			74	19	44	51							20	1 17				+ 16 66				
	18	10	29	354			4	18	15	96	17 27		+ 1 31			74	18	43	91								59	71				+ 15 80			
	19	10	24	447			4	17	21	14	22 38		+ 1 24			74	17	37	5								53	98				+ 16 43			
	21	10	15	79			4	1	35	14	36 31		+ 1 17			74	15	13	97								9	60				+ 15 63			
	29	9	37	331			4	9	27	45	28 83		+ 1 38			74	2	36	11								51	68				+ 15 57			
	30	9	32	589			4	8	48	57	49 95		+ 1 38			74	0	41	79								56	12				+ 14 33			
	31	9	28	262			4	8	11	40	12 78		+ 1 38			73	58	43	28								55	93				+ 12 6			
1846																																			
Jan	2	9	19	246			4	7	2	27	3 58		+ 1 31			73	54	27	46								41	59				+ 14 13			
	11	8	40				4	2								73	31	35	40								49	38				+ 13 98			
	13	8	31	571			4	2	49	98	51 07		+ 1 09			73	25	39	74								55	69				+ 15 95			
	14	8	27	503			4	2	37	93	39 02		+ 1 09			73	22	37	50								52	45				+ 14 95			
	16	8	19	403			4	2	19	57	20 36		+ 0 79			73	16	19	63								33	66				+ 14 03			
	17	8	15	378			4	2	12	72	13 77		+ 1 05			73	13	2	55								18	13				+ 15 58			
	18	8	11	375			4	2	8	17	8 96		+ 0 79			73	9	45	12								58	71				+ 13 59			
	19	8	7	379			4	2	5	01	5 94		+ 0 93			73	6	18	68								35	38				+ 16 70			
	23	7	52	05			4	2	10	80	11 77		+ 0 97			72	52	12	91								25	03				+ 12 12			
	26	7	40	353			4	2	33	68	34 61		+ 0 93			72	40	56	07								70	36				+ 14 29			
	27	7	36	509			4	2	44	79	45 67		+ 0 88			72	37	5	30								18	88				+ 13 58			
	28	7	33	71			4	2	57	52	58 46		+ 0 94			72	33	8	67								24	36				+ 15 69			
	29	7	29	260			4	3	12	31	12 93		+ 0 62			72	29	13	79								26	74				+ 12 95			
Feb	1	7	18	302			4	4	5	36	6 36		+ 1 00			72	17	4	99								16	85				+ 11 86			
	2	7	14	559			4	4	26	69	27 44		+ 0 75			72	12	54	60								68	24							

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE PLANET VESTA (Continued)

M S l T m f	P IntOb- rv d	A R f m Obs rv t	A R f m N A.	E f N A	P i t O l rv d	N P D f r m Ob rv t l	N P D from N A	E f N A
1846								
Feb 3 7 11 22 6	C	4 4 49 11	50 11	+ 1 00	C	72 8 45 19	57 09	+ 11 90
4 7 8 51 1		4 5 13 45	14 40	+ 0 95		72 4 31 91	43 52	+ 11 61
5 7 4 20 5		4 5 39 06	40 23	+ 1 17		72 0 16 26	27 70	+ 11 44
6 7 0 42 0		4 6 6 58	7 60	+ 1 02		71 55 56 80	69 69	+ 12 89
9 6 50 35 3		4 7 37 82	38 73	+ 0 91		71 42 52 09	63 47	+ 11 38
10 6 47 12 5		4 8 11 04	12 06	+ 1 02		71 38 25 41	37 76	+ 12 35
11 6 43 51 2		4 8 45 88	46 83	+ 0 95		71 33 59 12	70 31	+ 11 19
12 6 40 31 4		4 9 22 04	23 04	+ 1 00		71 29 29 74	41 42	+ 11 68
13 6 37 12 9		4 9 59 63	60 62	+ 0 99		71 24 59 70	71 04	+ 11 34
1847								
M 31 12 37 19 0		13 11 27 42	31 40	+ 3 98		83 42 28 03	47 70	+ 19 67
Apr 1 2 12 27 40 2		13 9 40 33	44 46	+ 4 13		83 29 38 30	57 02	+ 18 72
3 12 22 0 0		13 8 46 22	50 29	+ 4 07		83 23 24 49	43 72	+ 19 23
6 12 8 18 5		13 6 1 79	5 78	+ 3 99		83 5 39 87	57 99	+ 18 12
7 12 3 37 0		13 5 6 34	10 53	+ 4 19		83 0 5 47	22 56	+ 17 09
9 11 53 45 1		13 3 15 77	19 95	+ 4 18		82 49 30 27	44 62	+ 14 35
10 11 48 53 9		13 2 20 5	24 77	+ 4 22		82 44 26 21	43 03	+ 16 82
13 11 34 22 9		12 59 36 48	40 62	+ 4 14		82 30 35 31	53 22	+ 17 91
14 11 29 33 5		12 58 42 42	46 67	+ 4 25		82 26 25 12	42 91	+ 17 79
21 10 56 4 0		12 52 43 41	47 44	+ 4 03		82 3 56 98	4 12 09	+ 15 11
22 10 51 20 2		12 51 55 56	59 66	+ 4 10		82 1 42 96	59 23	+ 16 27
29 10 18 48 7		12 46 54 27	58 09	+ 3 82		81 53 34 38	46 94	+ 12 56
May 3 10 0 42 5		12 44 31 89	35 77	+ 3 88		81 54 37 59	50 03	+ 12 44
4 9 56 15 3		12 44 0 15	3 96	+ 3 81		81 55 32 99	44 47	+ 11 48
11 9 25 4 1		12 41 3 05	6 84	+ 3 79		82 8 56 49	9 6 79	+ 10 30
20 8 48 41 3		12 39 20 00	23 35	+ 3 35		82 43 7 74	16 96	+ 9 22
21 8 44 42 9		12 39 17 24	20 67	+ 3 43		82 48 0 84	9 72	+ 8 88
22 8 40 45 8		12 39 16 49	19 78	+ 3 29		82 53 6 00	14 55	+ 8 50

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE PLANET JUNO

1833								
April 27 12 57	C	15 20	19 59 74		C	92 48 21 24	17 40	— 3 84
28 12 53 10 5		15 19 16 68	13 73	— 2 95		92 42 28 67	26 70	— 1 97
29 12 48 28 1		15 18 29 99	27 29	— 2 70		92 36 41 96	40 40	— 1 56
May 2 12 34 18 7		15 16 8 84	6 17	— 2 67		92 19 53 28	49 30	— 3 98
8 12 5 56 4		15 11 20 33	17 24	— 3 09				
9 12 1 12 1		15 10 31 45	28 68	— 2 77				
10 11 56 27 0		15 9 43 39	40 14	— 3 25		92 39 6 49	57 80	— 8 69
11 11 51 42 9		15 8 54 28	51 65	— 2 63		92 34 29 99	20 60	— 9 39
12 11 46 59 8		15 8 6 82	3 26	— 3 56				
13 11 42 15 8		15 7 18 38	15 03	— 3 35				
1835								
Dec 21 12 48 40 6		6 47 15 92	12 53	— 3 39		90 5 0 96	5 20 58	+ 19 62
24 12 34 18 4		6 44 40 33	36 60	— 3 73		89 59 20 91	59 41 72	+ 20 81
25 12 29 29 6		6 43 47 34	43 82	— 3 52		89 56 50 32	57 10 04	+ 19 72
26 12 24 40 7		6 42 54 45	50 57	— 3 88		89 53 57 68	54 19 06	+ 21 38
27 12 19 51 2		6 42 0 41	57 08	— 3 33		89 50 50 03	51 9 48	+ 19 4
28 12 12 0 0		6 41 7 13	3 53	— 3 60		89 47 20 27	47 41 08	+ 20 81
30 12 5 22 9		6 39 19 45	15 99	— 3 46		89 39 27 64	39 47 91	+ 20 27
1836								
Jan 2 11 50 55 7		6 36 39 36	35 77	— 3 59		89 25 22 68	25 44 07	+ 21 39
3 11 46 6 8		6 35 46 55	42 98	— 3 57		89 20 4 60	20 28 12	+ 23 52

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE PLANET JUNO (Cont: d)

M an S lar Tim f	I t Ob	A R fr m	A R fr m	Erro f N A	P int Ob	N P D f m	N P D	E f N A
Ob rv d	rved	Obs t	N A		rv d	Ob rv i	from N A	
1836								
Jan 6 11 31 44 1	C	6 33 11 25	7 62	— 3 63	C	89 2 41 14	3 1 0	+ 20 36
7 11 26 57 7		6 32 20 57	17 08	— 3 49		88 56 17 9	56 40 92	+ 22 97
8 11 22 12 4		6 31 30 89	27 30	— 3 59		88 50	5 17	
11 11 8 0 7		6 29 6 84	3 30	— 3 54		88 28 29 33	28 1 63	+ 22 30
13 10 58 39 0		6 27 36 25	32 43	— 3 82		88 13 15 42	13 3 37	+ 19 95
14 10 53 58 6		6 26 52 38	48 77	— 3 61		88 5 19 39	5 38 47	+ 19 08
16 10 44 43 2		6 25 28 83	25 30	— 3 53		87 49	49 9 91	
24 10 8 43 4		6 20 54 73	51 11	— 3 62		86 36 32 12	36 3 41	+ 21 29
31 9 38 42 7		6 18 24 98	21 71	— 3 27		85 27 40 44	28 2 15	+ 22 01
Feb 1 9 34 30 0		6 18 10 90	7 77	— 3 13		8 17 38 01	17 8 36	+ 20 35
2 9 30 22 9		6 17 58 61	55 75	— 2 86		8 7 28 82	7 52 03	+ 23 21
1837								
April 11 12 27 41 2		13 46 49 29	44 94	— 4 35		89 53 43 89	40 48	— 3 41
12 12 22 58 3		13 46 1 96	57 85	— 4 11		89 47 22 81	18 43	— 4 38
18 11 54 38 7		13 41 17 56	14 29	— 3 27		89 3 5 33	51 75	— 3 8
23 11 31 7 5		13 37 25 15	21 34	— 3 81		88 31 23 01	20 14	— 2 87
27		13 34	21 02			88 7 42 10	31 82	— 7 28
1839								
Oct. 15 11 49		1 24 16 19	17 95	+ 1 76		94 22 1 30	21 47 19	— 14 11
16 11 45 17 0		1 23 37 51	39 14	+ 1 63		91 34 40 63	27 07	— 13 56
17 11 41 21 8		1 22 58 61	60 32	+ 1 71		94 47 10 1	46 54 97	— 15 54
1845								
Feb 7 12 23 34 1		9 34 34 26	37 10	+ 2 84		86 34 24 15	34 7 08	+ 32 93
9 12 13 59 1		9 32 51 07	53 95	+ 2 88		86 15 11 76	15 41 87	+ 30 11
10 12 9 2 5		9 31 59 83	2 48	+ 2 65		86 5 24 30	5 31 05	+ 31 05
12 11 59 37 8		9 30 17 25	20 20	+ 2 95		85	46 7 31	
13 11 54 51 5		9 29 26 56	29 49	+ 2 93		85 35 36 93	36 7 07	+ 30 14
14 11 50 5 9		9 28 36 38	39 19	+ 2 81		85 25 31 79	26 3 34	+ 31 5
15 11 45 20 0		9 27 46 38	49 34	+ 2 96		85 15 25 88	15 6 77	+ 30 89
16 11 40 34 8		9 26 57 08	0 03	+ 2 95		85 5 17 65	5 48 08	+ 30 43
17 11 35 50 5		9 26 8 44	11 30	+ 2 86		84 55 6 4	37 03	+ 31 09
19 11 26 32 7		9 24 32 90	35 86	+ 2 96		84 34 42 41	35 11 07	+ 31 66
22 11 12 19 0		9 22 15 79	18 52	+ 2 73		84 4 9 29	4 31	+ 30 26
24 11 2 59 9		9 20 48 65	51 50	+ 2 85		83 43 52 66	44 21 33	+ 30 67
26 10 53 45 6		9 19 25 86	28 59	+ 2 73		83 23 4 33	24 17 24	+ 31 31
27 10 49 10 1		9 18 46 10	48 80	+ 2 70		83 13 48 4	14 19 20	+ 30 7
28 10 44 35 3		9 18 7 42	10 16	+ 2 74		83 3 54 96	4 2 08	+ 30 12
Mar 3 10 30 58 9		9 16 18 59	21 65	+ 3 06		82 34 38 99	34 10 31	+ 31 52
4 10 26 29 3		9 15 45 11	48 04	+ 2 93		82 25 10 48	25 36 42	+ 25 94
6 10 17 33 9		9 14 41 73	44 98	+ 3 25		82 6 20 00	6 46 45	+ 26 45
8 10 8 44 7		9 13 44 11	47 60	+ 3 49		81 47 50 44	48 23 42	+ 32 98
9 10 4 22 7		9 13 17 80	21 11	+ 3 31		81 38 2 64	39 22 80	+ 30 16
10 10 0 2 1		9 12 53 13	56 11	+ 2 98		81 30 0 09	30 29 95	+ 29 86
11 9 55 42 9		9 12 29 80	32 63	+ 2 83		81 21 18 30	21 45 04	+ 26 74
12 9 51 25 3		9 12 7 87	10 71	+ 2 84		81 12 36 40	13 8 42	+ 32 02
1846								
April 29 12 25 46 2		14 55 11 04	10 88	— 0 16		91 39 36 55	42 90	+ 6 3
30 12 21 2 5		14 54 22 96	23 07	+ 0 11		91 33 53 30	56 78	+ 3 48
May 1 12 16 18 2		14 53 34 91	35 12	+ 0 21		91 28 14 83	16 22	+ 1 39
2 12 11 34 2		14 52 46 66	47 05	+ 0 39		91 22 42 21	41 66	— 0 5
3 12 6 50 3		14 51 58 56	58 92	+ 0 36		91 15		
4 12 2 6 2		14 51 10 38	10 77	+ 0 39		91 11		
5 11 57 22 4		14 50 22 08	22 64	+ 0 56		91 6 33 63	35 94	+ 2 31
7 11 47 54 7		14 48 46 12	46 63	+ 0 51		90 56 25 66	25 84	+ 0 18
8 11 43 11 0		14 47 58 45	58 81	+ 0 36		90 51 28 60	31 54	+ 2 94
9 11 38 27 6		14 47 10 49	11 20	+ 0 71		90 46 40 38	44 63	+ 4 25

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE PLANET JUNO (*C* *tinued*)

M an S i T i m f	P t Ob	A R f m	A R f r m	E f N A	P unt Ob	N P D f m	N P D	Err f N A
Ob	d	Ob t l	N A		r v d	Ob r v t l	f m N A	
1846								
May 11 11 29 15	C	14 45 36 07	36 67	+ 0 60	C	90 37 29 79	33 83	+ 4 04
14 11 14 54 7		14 43 16 75	17 32	+ 0 57		90 24 46 45	47 45	+ 1 00
15 11 10 13 4		14 42 30 96	31 67	+ 0 71		90 20 44 10	48 55	+ 4 45
1847								
July 13 11 38 34 9		19 2 35 86	38 96	+ 3 10		94 55 20 92	54 55 23	— 25 69
19 11 9 46 2		18 57 21 62	24 62	+ 3 00		95 17 41 63	17 13 99	— 27 64
20 11 4 59 3		18 56 30 57	33 49	+ 2 92		95 21 47 44	21 24 08	— 23 36

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE PLANET PALLAS

1832								
Sept 24 11 27 39 3	C	23 41 55 03	53 59	— 1 44	C	95 59 12 29	58 30 90	— 41 39
25 11 22 58 5		23 41 10 03	8 34	— 1 09		96 13 23 40	12 46 40	— 37 00
O t 1 10 54 58 7		23 36 44 78	43 60	— 1 18		97 37 3 21	36 24 90	— 38 31
1834								
Ja 25 12 32 31 6		8 50 57 33	16 74	+ 19 41		114 8 39 78	44 24	+ 4 46
26 12 27 51 4		8 50 12 76	31 98	+ 19 22		113 55 9 18	12 79	+ 3 61
27 12 23 10 6		8 49 27 67	46 86	+ 19 19		113 41 1 46	5 94	+ 4 48
28 12 18 29 0		8 48 42 67	1 47	+ 18 80		113 26 19 47	23 69	+ 4 22
29 12 13 48 7		8 47 56 54	15 90	+ 19 36		113 11 5 13	6 30	+ 1 17
30 12 9 6 1		8 47 10 82	30 26	+ 19 44		112 55 10 10	14 63	+ 4 53
31 12 4 23 4		8 46 25 24	44 61	+ 19 37		112 38 42 18	46 75	+ 4 7
Feb 1 11 59 43 6		8 45 40 10	59 00	+ 18 90		112 21 39 16	45 85	+ 6 69
2 11 55 2 5		8 44 54 25	13 5	+ 19 30		112 4 4 62	10 27	+ 5 65
3 11 50 21 6		8 44 8 90	28 33	+ 19 43		111 45 54 24	62 16	+ 7 52
4 11 45 40 7		8 43 24 05	43 44	+ 19 39		111 27 12 90	20 68	+ 7 78
6 11 36 20 2		8 41 55 77	14 90	+ 19 13		110 47		
8 11 27 2 7		8 40 29 32	48 65	+ 19 33		110 7 14 75	21 72	+ 6 97
10 11 17 47 2		8 39 5 88	25 33	+ 19 45		109 24 16 89	25 48	+ 8 59
11 11 13 18 6		8 38 25 72	44 95	+ 19 23		109 2 8 37	16 15	+ 7 78
12 11 8 44 8		8 37 46 48	5 47	+ 18 99		108 39 32 58	41 40	+ 8 82
13 11 4 2 1		8 37 8 01	27 22	+ 19 21		108 17		
14 10 59 29 1		8 36 30 88	49 95	+ 19 07		107 53 11 19	17 90	+ 6 71
15 10 54 57 9		8 35 54 85	13 90	+ 19 05		107 29 20 75	32 06	+ 11 31
18 10 41 39 9		8 34 14 36	33 25	+ 18 89		106 16 2 64	12 01	+ 9 37
19 10 37 13 4		8 33 43 83	2 41	+ 18 58		105 51 1 98	8 83	+ 6 85
20 10 32 38 4		8 33 14 30	33 03	+ 18 73		105 25 43 39	49 51	+ 6 19
21 10 28 14 8		8 32 46 37	5 15	+ 18 78			15 51	
22 10 23 50 4		8 32 20 14	38 80	+ 18 66		104 34 21 15	28 15	+ 7 00
23 10 19 31 4		8 31 54 89	13 99	+ 19 10		104 8 23 27	28 88	+ 5 61
24 10 15 12 7		8 31 32 22	0 79	+ 18 57		103 42 12 61	19 44	+ 6 83
25 10 10 56 0		8 31 10 95	29 26	+ 18 31		103 15 54 19	59 33	+ 5 14
26 10 6 40 0		8 30 51 05	9 37	+ 18 32		102 49 28 40	30 46	+ 2 06
27 10 2 25 8		8 30 32 90	51 23	+ 18 33		102 22 51 98	55 58	+ 3 60
28 9 58 13 7		8 30 16 53	35 18	+ 18 65		101 56 11 17	15 11	+ 3 94
Mar 1 9 54 2 7		8 30 2 04	20 13	+ 18 09		101 29 29 70	30 43	+ 0 73
2 9 49 54 4		8 29 49 21	7 21	+ 18 00		101 2 41 35	42 68	+ 1 33
3 9 45 49 3		8 29 38 41	56 13	+ 17 72		100 35 53 19	53 12	— 0 07
4 9 41 41 8		8 29 29 23	46 86	+ 17 63		100 9 3 29	3 16	— 0 13
1835								
June 18 11 11 17 4		16 56 16 23	23 13	+ 6 90				
19 11 6 33 2		16 55 28 27	35 48	+ 7 21				
1836								
Aug 17 11 13 56 3		20 58 27 79	29 43	+ 1 64		78 46 28 90	3 13	— 25 77

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE PLANET PALLAS (Continued)

Mean Solar Time of Observation	Planet Observed	Right Ascension of Observation	Right Ascension of N.A.	Error of N.A.	Planet Observed	North Polar Distance of Observation	North Polar Distance of N.A.	Error of N.A.
1836 Sept 10 9 24 53.9	C	20 43 46.11	47 47	+ 1 36	C	83 23 1 03	22 30 89	- 30 14
1837 Oct 13 12 48 29.5		2 18 4 00	7 74	+ 3 74		108 25 48 99	25 25 33	- 23 66
16 12 35 32.4		2 15 54 80	58 13	+ 3 33		109 14 57 86	42 69	- 15 17
23 12 2 36.2		2 10 29 23	32 95	+ 3 72		111 0 57 21	43 98	- 13 23
25 11 53 7.6		2 8 52 42	56 18	+ 3 76		111 28 33 03	18 94	- 14 09
1839 M 25 13 6 23.0		13 16 43 01	5 77	+ 22 76		77 45 38 14	43 71	+ 5 57
27 12 67 9.2		13 15 20 64	43 28	+ 22 64		77 3 52 60	58 97	+ 6 37
28 12 52 31.5		13 14 38 47	1 11	+ 22 64		76 43 53 39	26 17	
30 12 43 13.6		13 13 12 33	35 19	+ 22 86		76 3 0 40	4 43	+ 4 03
31 12 38 34.0		13 12 28 70	51 57	+ 22 87		75 43 11 49	17 10	+ 5 61
Ap 1 4 12 19 53.6		13 9 31 06	54 17	+ 23 11		74 27 1 44	5 66	+ 4 22
5 12 15 12.7		13 8 46 53	9 39	+ 22 86		74 8 47 22	50 99	+ 3 77
6 12 10 32.6		13 8 1 98	24 59	+ 22 61		73 50 54 43	7 08	+ 2 6
7 12 5 52.2		13 7 17 15	39 80	+ 22 65		73 33 21 78	24 42	+ 2 64
8 12 1 11.6		13 6 32 45	55 14	+ 22 69		73 16 12 70	13 78	+ 1 08
13 11 37 52.7		13 2 53 05	15 48	+ 22 43		71 56 10 18	9 93	- 0 25
14 11 33 14.5		13 2 10 27	32 74	+ 22 47		71 41 21 51	21 88	+ 0 37
15 11 28 36.9		13 1 28 22	50 52	+ 22 30		71 26 59 36	58 92	- 0 44
16 11 23 59.5		13 0 46 61	8 94	+ 22 33		71 13 2 29	1 40	- 0 89
17 11 19 22.8		13 0 6 84	28 21	+ 22 37		70 59 32 21	32 01	- 0 20
18 11 14 46.8		12 59 25 60	47 77	+ 22 17		70 46 2 43	22 85	- 2 8
19 11 10 11.6		12 58 46 23	8 30	+ 22 07		70 33 43 57	42 17	- 1 40
20 11 5 37.5		12 58 7 75	29 69	+ 21 94		70 21 29 34	27 36	- 1 98
27 10 34 3.0		12 54 4 52	25 96	+ 21 44		69 7 53 63	43 89	- 9 74
28 10 29 39.9		12 53 33 90	55 37	+ 21 47		68 59 4 24	8 53 43	- 10 81
29 10 25 12.0		12 53 4 81	25 94	+ 21 13		68 50 39 29	27 74	- 11 55
1844 May 10 12 46						64 59 41 88		
12 12 36						64 44 59 37		
13 12 31 21.9		15 57 54 13				64 38 34 36		
14 12 26 24.9		15 57 3 37				64 32 8 39		
18 12 6						64 10 28 86		
1845 A g 27 9 27 27.0		19 50 26 10	24 93	- 1 17		78 10 3 04	9 48 10	- 14 94
29 9 18 42.7		19 49 33 52	32 56	- 0 96		78 33 35 86	33 18 54	- 17 32
1846 Sept 24 12 28 52.7		0 41 48 69	45 90	- 2 79		98 44 10 04	43 36 73	- 33 31
26 12 24 13.1		0 41 4 66	1 84	- 2 82		99 0 6 18	59 24 60	- 41 58
26 12 19 32.6		0 40 20 13	17 40	- 2 73		99 15 49 49	15 9 41	- 40 08
28 12 10 11.0		0 38 49 98	47 25	- 2 73		99 47 8 87	46 26 87	- 42 00
29 12 5 29.8		0 38 4 29	1 66	- 2 63		100 2 39 38	1 58 29	- 41 09
Oct 2 11 51 24.9		0 35 46 60	43 63	- 2 97		100 48 34 98	47 55 18	- 39 80
8 11 23 12.6		0 31 8 82	6 09	- 2 73				
13 10 59 47.6		0 27 22 51	19 83	- 2 68		103 25 11 63	24 30 52	- 41 11
24 10 9 5.3		0 19 54 16	51 41	- 2 75		105 34 29 98	33 47 67	- 42 31
26 10 0 3.0		0 18 43 50	40 94	- 2 56		105 54 26 15	53 44 99	- 41 16

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE PLANET CERES

1832 Oct 23 12 38 8.6	C	2 46 56 33	56 75	+ 0 42	C	85 40 55 17	59 10	+ 3 93
24 12 33 20.5		2 46 4 14	4 63	+ 0 49		85 43 20 57	24 20	+ 3 63

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE PLANET CERES (*C nt n ed*)

M an S I T m f	P int Ob	A R fr m	A R f m	Err f N A	P in Ob-	N P D f m	N P D	Err f N A
Ob rv n.	rv d.	Ob i	N A		d	Ob ti	f m N A	
1832								
O t 2 12 26 32 8	C	2 45 11 56	11 93	+ 0 37	C	85 45 40 31	46 50	+ 6 19
26 12 23 43 2		2 44 18 26	18 77	+ 0 51		85 47 57 81	2 90	+ 5 09
27 12 19 33 8		2 43 24 68	25 09	+ 0 41		85 50 11 89	15 90	+ 4 01
29 12 13 13 1		2 41 36 06	36 57	+ 0 51		85 4 23 05	28 20	+ 5 15
30 12 4 23 1		2 40 41 24	41 86	+ 0 62		85 56 20 00	27 00	+ 7 00
31 11 59 32 6		2 39 46 26	46 93	+ 0 67		85 58 14 61	20 60	+ 5 89
N v 1 11 54 42 9		2 38 51 43	51 78	+ 0 35		86 0 2 85	8 80	+ 5 95
2 11 49 50 4		2 37 56 16	56 54	+ 0 38		86 1 44 79	51 60	+ 6 71
3 11 44 59 9		2 37 0 78	1 26	+ 0 48		86 3 24 31	28 10	+ 3 79
4 11 40 8 8		2 36 5 51	5 99	+ 0 48		86 4 55 59	58 70	+ 3 11
5 11 35 17 5		2 35 10 31	10 82	+ 0 51		86 6 18 88	22 90	+ 4 02
12 11 0 28 9		2 28 50 76	51 26	+ 0 50		86 12 55 02	1 30	+ 6 98
1834								
Feb 10 13 5 42 1		10 27 18 61	19 11	+ 0 50		63 30 31 04	39 36	+ 8 32
11 13 1 4 8		10 26 28 64	29 06	+ 0 42		63 22 53 83	61 72	+ 7 89
12 12 56 19 8		10 26 37 78	38 32	+ 0 54		63 15 23 88	32 23	+ 8 35
14 12 46 34 9		10 23 54 58	54 88	+ 0 30		63 0 50 86	59 83	+ 8 97
15 12 41 47 6		10 23 1 98	2 38	+ 0 40		62 53 49 37	58 00	+ 8 63
17 12 32 8 1		10 21 15 5	16 07	+ 0 52		62 40 16 60	2 17	+ 8 7
18 12 27 20 5		10 20 21 82	22 49	+ 0 67		62 33 45 52	55 44	+ 9 92
19 12 22 30 0		10 19 27 89	28 66	+ 0 77		62 30		
20 12 17 40 8		10 18 33 99	34 72	+ 0 73		62 21 21 99	31 25	+ 9 26
21 12 12 51 5		10 17 40 28	40 67	+ 0 39		62 15 29 86	37 37	+ 7 1
22 12 7 59 3		10 16 46 14	46 66	+ 0 52		62 9 48 23	56 45	+ 8 22
23 12 3 11 5		10 15 52 07	52 76	+ 0 69		62 4 19 80	28 48	+ 8 68
26 11 48 44 0		10 13 11 79	12 18	+ 0 39		61 49 19 50	25 63	+ 6 13
27 11 43 55 1		10 12 18 91	19 32	+ 0 41		61 44 44 55	52 60	+ 8 05
Mar 1 11 34 18 3		10 10 34 30	35 00	+ 0 70		61 36 24 10	29 93	+ 8 3
2 11 29 31 9		10 9 43 14	43 67	+ 0 53		61 32 34 17	40 74	+ 6 57
3 11 24 47 7		10 8 52 59	53 02	+ 0 43		61 28 57 80	66 46	+ 8 66
1835								
May 24 13 22 48 5		17 29 33 44	34 41	+ 0 97		111 52 17 78	3 31	- 14 47
26 13 13 13 3		17 27 51 66	53 28	+ 1 62		111 57 35 41	22 20	- 13 21
27 13 8 25 6		17 27 0 39	1 36	+ 0 97		112 0 15 23	0 34	- 14 89
28 13 3 38 1		17 26 7 87	8 55	+ 0 68		112 2 55 18	40 09	- 15 09
June 1 12 45 16 5		17 2 28 65	29 88	+ 1 23		112 13 24 22	9 92	- 14 30
18 11 21 7		17 8	3 01			112 55 12 79	54 57 80	- 14 99
19 11 16 15		17 7	5 76			112 57 28 86	14 46	- 14 40
1836								
Sept 12 12 1 0 3		23 28 10 79	10 75	- 0 04		110 44 55 15	48 50	- 6 6
Oct 1 10 31 16 5		23 13 7 18	7 00	- 0 18		111 42 18 31	10 25	- 8 06
3 10 22 3 4		23 11 45 90	45 63	- 0 27		111 44 6 49	1 31	- 5 18
6 10 8 21 6		23 9 50 94	50 99	+ 0 05		111 45 22 54	15 72	- 6 82
7 10 3 49 8		23 9 14 92	14 90	- 0 02		111 45 26 13	20 70	- 5 43
8 9 59 19 8		23 8 40 05				111 45 12 57		
1837								
Dec 17 11 13 40 6		4 59 17 27	18 39	+ 1 12		67 37		
18 11 8 45 8		4 57 17 05	17 88	+ 0 83		67 35 39 52	58 36	+ 18 84
1839								
Mar 30 12 59 44 9		13 29 46 40	44 80	- 1 60		82 34 30 42	10 67	- 19 75
31 12 55 0 0		13 28 57 44	55 85	- 1 59		82 30 12 75	29 53 24	- 19 51
Ap 1 2 12 45 28 9		13 27 17 45	16 21	- 1 24		82 21 58 80	39 31	- 19 49
4 12 35 55 7		13 25 35 76	34 54	- 1 22		82 14 14 77	13 55 49	- 19 28
5 12 31 8 3		13 24 44 69	43 12	- 1 57		82 10 35 95	15 82	- 20 13

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE PLANET CERES (Contd.)

Mean S. Time of Observation	Place of Observation	Right Ascension of Object	Right Ascension of N.A.	Distance from N.A.	Place of Observation	North Polar Distance of Object	North Polar Distance from N.A.	Error from N.A.
1839 Apr 1 6 12 26 21.0	C	13 23 30.0	51 34	— 1.66	C	82 7 50	6 44 89	— 20 66
7 12 21 33.4		13 23 09.4	59 32	— 1.62		82 3 42 80	23 12	— 19 68
8 12 16 45.3		13 2 8 0	7 13	— 1.7		82 0 33 68	10 24	— 23 44
13 11 52 44.8		13 17 47 01	45 51	— 1.50		81 46 58 58	38 38	— 20 20
14 11 47 56.8		13 16 55 03	3 52	— 1.51		81 44 48 26	28 26	— 20 00
15 11 43 9.7		13 16 34.4	1 81	— 1.63		81 42 48 60	29 0	— 19 15
16 11 38 22.3		13 15 11 76	10 40	— 1.36		81 41 0 39	40 42 21	— 18 18
17 11 33 35.7		13 14 21 10	19 39	— 1.71		81 39 27 06	6 6	— 20 41
18 11 28 49.4		13 13 30 45	28 71	— 1.71				
19 11 24 3.5		13 12 40 37	38 79	— 1.58		81 36 49 66	31 19	— 18 47
20 11 19 18.5		13 11 50 9.3	49 34	— 1.59		81 35 50 51	31 6	— 18 98
27 10 46 21.6		13 6 24 78	23 36	— 1.43		81 34 41 13	20 38	— 20 75
29 10 37 4.8		13 4 59 54	58 11	— 1.43		81 36 11 74	3 1 63	— 20 11
May 1 10 27 52.3		13 3 38 36	36 99	— 1.37		81 38 33 38	12 11	— 21 24
1843 J 27 12 1 30.6		8 27 4 39	8 71	+ 4.3		58 43 11 02	36 73	+ 2 71
29 11 51 41.7		8 25 6 49	10 49	+ 4.00		58 31 28 6	50 1	+ 26 80
31 11 41 52.1		8 23 9 50	13 21	+ 3.71		8 20 32 77	7 67	+ 21 90
Feb 3 11 27 13.3		8 20 17 23	20 75	+ 3.52		58 5 3 18	50 97	+ 21 49
8 11 3 1.8		8 15 44 28	47 75	+ 3.47		57 44 35 72	55 57	+ 19 8
13 10 89 16.1		8 11 37 37	40 85	+ 3.48		57 28 40 10	29 0 31	+ 20 21
14 10 34 33.6		8 10 51 78	55 30	+ 3.2		57 26 6 94	2 73	+ 18 79
15 10 29 53.6		8 10 7 26	11 16	+ 3.90		57 23 43 43	21 3 11	+ 19 71
16 10 25 16.1		8 9 24 40	28 46	+ 4.06		7 21 32 46	52 0	+ 20 04
17 10 20 38.3		8 8 43 61	47 30	+ 3.69		57 19 32 78	53 75	+ 20 97
18 10 16 2.3		8 8 3 45	7 64	+ 4.19		57 17 47 76	18 6 49	+ 18 73
19 10 11 29.8		8 7 26 14	29 55	+ 3.41		57 16 11 56	30 82	+ 19 26
20 10 6 56.7		8 6 49 31	53 14	+ 3.83		57 14 48 08	15 6 6	+ 18 57
21 10 2 27.0		8 6 15 12	18 39	+ 3.27		7 13 35 53	53 75	+ 18 22
1844 A 5 21 12 23 27.2		22 23 15 56	21 06	+ 8.50		11 57 57 13	11 28	— 45 8
23 12 13 52.7		22 21 32 51	41 23	+ 8.72		116 9 15 58	8 26 0	— 48 99
26 11 59 30.1		22 18 57 38	98	+ 8.60		116 2 2 32	24 13 79	— 48 53
27 11 54 42.3		22 18 5 52	14 20	+ 8.68		116 29 57 24	10 75	— 46 49
28 11 49 54.6		22 17 13 84	22 49	+ 8.6		116 34 44 07	33 7 88	— 46 19
29 11 45 7.4		22 16 22 31	30 93	+ 8.62		116 39 21 64	38 34 87	— 46 77
31 11 35 38.6		22 14 39 89	48 45	+ 8.56		116 48 2 72	47 17 1	— 45 18
Sept 2 11 26 0.3		22 12 58 35	7 22	+ 8.87		116 56 1 87	55 17 12	— 44 75
10 10 48 10.2		22 6 35 15	43 88	+ 8.73		117 20 20 38	19 39 50	— 40 88
11 10 43 30.6		22 5 50 51	59 25	+ 8.74		117 22 31 76	21 49 61	— 42 15
12 10 38 50.5		22 5 6 73	15 50	+ 8.77		117 24 31 43	23 47 85	— 43 58
17 10 15 47.4		22 1 42 80	51 36	+ 8.56		117 31 22 06	30 42 97	— 39 09
19 10 6 41.7		22 0 28 33	37 20	+ 8.87		117 32 42 87	7 59	— 35 8
1846 Nov 18 11 58 37.9		3 48 19 23	29 63	+ 10.40		76 49 58 18	18 81	— 39 37
19 11 53 43.2		3 47 20 39	30 86	+ 10.47				
30 10 59 50.1		3 36 40 15	50 35	+ 10.20		76 44 8 66	43 27 49	— 41 17
Dec 9 10 16 34.2		3 28 45 76	55 54	+ 9.78		76 33 24 20	32 43 92	— 40 28
11 10 7 7.2		3 27 10 60	20 8	+ 9.98		76 30 11 45	29 29 21	— 42 24
12 10 2 56.1		3 26 25 43	34 8	+ 9.42		6 28 24 77	27 44 36	— 40 41
18 9 34 43.6		3 22 17 25	27 40	+ 10.15		76 16 5 49	15 26 76	— 38 73
19 9 30 12.4		3 21 41 68	51 03	+ 9.35		76 13 46 28	13 5 35	— 40 93

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF JUPITER

M S lar Tim f	P i t Ob	A R fr m	A R f m	E f f N A	P i n t Ob	N P D f m	N P D	Err f N A
Ob rv i	rved	Ob i	N A		ery d	Ob rv ti	f m N A	
1831		m						
M 1 22 9 23 4	C	20 46 19 34			C	108 26 25 01		
3 2 3 31 1		20 48 19 32				108 19 41 69		
5 21 57 38 7		20 50 18 98				108 11 4 48		
A g 23 11 9 2 2		21 14 6 83				107 7 48 33		
26 10 55 47 8		21 12 39 90				107 14 26 50		
28 10 47 0 6		21 11 44 25				107 18 37 50		
29 10 42 36 9		21 11 16 51						
30 10 38 13 9		21 10 49 25				107 22 44 86		
S pt 1 10 29 30 2		21 9 56 21				107 26 36 15		
2 10 25 7 8		21 9 30 78				107 28 31 30		
4 10 16 25 8		21 8 40 28				107 31 12 72		
9 9 54 49 9		21 6 43 85				107 40 36 25		
11 9 46 16 8		21 6 1 13				107 43 32 63		
13 9 37 43 8		21 5 21 22				107 46 23 48		
15 9 29 14 5		21 4 43 49				107 49 5 67		
17 9 20 48 2		21 4 8 93				107 51 30 84		
20 9 8 13 6		21 3 21 89				107 54 36 42		
22 8 59 55 0		21 2 54 06				107 56 31 82		
24 8 51 37 3		21 2 29 12				107 58 6 38		
29 8 31 9 6		21 1 40 79						
30 8 27 4 0		21 1 31 12				108 1 35 71		
Oct 2 8 19 13		21 1 20 26				108 2 16 41		
3 8 10 0 5		21 1 15 29				108 2 33 29		
6						108 3 13 48		
8 7 55 7 6		21 1 1 98						
14 7 31 43 0		21 1 12 75						
16 7 24 2 8		21 1 24 52				108 0 51 11		
20 7 8 44 5		21 1 49 60						
21 7 4 59 6		21 2 0 79				107 57 39 82		
22 7 1 13 8		21 2 10 87				107 56 46 89		
23 6 57 29 4		21 2 22 43				107 55 54 92		
25 6 50 0 7		21 2 45 63				107 54 1 10		
30 6 31 33 1		21 3 57 91				107 48 16 96		
31 6 27 55 2		21 4 15 95				107 46 59 28		
Nov 1 6 24 16 3		21 4 33 13				107 45 38 73		
3 6 17 1 7		21 5 10 14				107 42 45 97		
6 6 6 15 7		21 6 12 06				107 38 11 67		
9 5 55 34 8		21 7 19 14				107 32 50 88		
D c 11 4 7 21 4		21 24 57 55				106 10 12 36		
1832								
May 12 20 9 52 0		23 33 18 31				94 3 55 89		
14 20 3 16 6		23 34 35 11				93 56 6 43		
15 19 59 59 2		23 35 13 84				93 52 13 55		
16 19 56 41 8		23 35 52 63				93 48 26 82		
17 19 53 22 4		23 36 29 50				93 44 42 60		
26 19 23 10 0		23 41 40 99				93 13 8 32		
31 19 6 9 1		23 44 17 82				92 57 23 70		
June 9 18 34 57 0		23 48 31 73				92 32 39 88		
10 18 31 26 1		23 48 57 16				92 30 12 30		
11 18 27 54 9		23 49 21 92				92 27 46 18		
12 18 24 23 2		23 49 46 29				92 25 27 53		
13 18 20 51 0	1 & 2	23 50 9 73				92 23 7 96		
14 18 17 18 1		23 50 32 93				92 20 57 89		

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF JUPITER (*Continued*)

Mean Solar Time of Observation	Point Observed	A. R. from Observation	A. R. from N A	Error of N A	Position Observed	N P D from Observation	N P D from N A	Error of N A
1832								
June 15 18 13 44.5	1 & 2	23 50 55.44			C	92 18 48.01		
17 18 6 35.3		23 51 37.89				92 14 43.78		
Sept 22 11 29 38.6		23 36 11.54				94 18 33.99		
24 11 21 0.1		23 35 14.73				94 24 43.67		
25 11 16 34.2		23 34 45.20				94 27 48.33		
26 11 12 10.1		23 34 16.79				94 30 48.99		
27 11 7 46.2		23 33 48.74				94 33 48.02		
Oct 1 10 50 12.5		23 31 57.81				94 45 21.70		
8 10 19 41.0		23 28 58.51				95 3 52.36		
11 10 6 43.4		23 27 47.88				95 10 58.93		
12 10 2 24.6		23 27 25.02				95 13 15.48		
13 9 58 6.6		23 27 3.71				95 15 27.30		
14 9 53 50.5		23 26 42.55				95 17 32.51		
19 9 32 29.6		23 25 1.70				95 27 14.52		
20 9 24 3.5		23 24 26.26				95 30 36.04		
22 9 19 51.2		23 24 9.64				95 32 12.44		
23 9 15 38.9		23 23 53.42				95 33 42.61		
24 9 11 27.2		23 23 37.76				95 35 8.88		
25 9 7 17.1		23 23 22.88				95 36 29.53		
26 9 3 6.6		23 23 8.67				95 37 45.67		
27 8 58 57.2		23 22 55.21				95 38 59.91		
28 8 54 48.8		23 22 42.98				95 40 4.40		
29 8 50 40.1		23 22 30.25				95 41 7.77		
30 8 46 33.1		23 22 18.93				95 42 6.36		
31 8 42 27.0		23 22 8.66				95 42 55.15		
Nov 2 8 34 15.6		3 21 49.18				95 44 29.07		
4 8 26 8.2		23 21 33.43				95 45 42.98		
5 8 22 4.7		23 21 26.00				95 46 10.30		
9 8 6 1.0		23 21 5.95				95 47 19.81		
10 8 2 1.9		23 21 2.57				95 47 24.90		
11 7 58 2.8		23 20 59.05				95 47 20.96		
12 7 54 5.5		23 20 58.18				95 47 15.93		
15 7 42 17.3		23 20 57.57				95 46 33.75		
16 7 38 22.8		23 20 58.76				95 46 9.46		
17 7 34 28.8		23 21 1.00				95 45 38.37		
18 7 30 35.7		23 21 3.76				95 45 4.43		
19 7 26 43.4		23 21 7.36				95 44 24.71		
21 7 19 1.9		23 21 17.04				95 42 50.97		
22 7 15 10.7		23 21 22.59				95 41 55.47		
23 7 11 21.7		23 21 29.41				95 40 57.42		
25 7 3 45.2		23 21 44.63				95 38 45.33		
29 6 48 43.6		23 22 24.56				95 33 25.20		
30 6 44 57.4		23 22 36.47				95 31 55.05		
Dec 4 6 30 7.9		23 23 30.81				95 25 0.06		
6 6 22 49.2		23 24 1.80				95 21 8.46		
7 6 19 7.6		23 24 18.46				95 17 3.32		
9 6 11 51.2		23 24 53.83						
10 6 8 14.3		23 25 12.69						
11 6 4 37.6		23 25 31.72						
12 6 1 1.5		23 25 52.05				95 7 43.13		
13 5 57 26.5		23 26 12.62				95 5 17.64		
15 5 50 17.6		23 26 56.23						
16 5 46 44.0		23 27 18.51				94 57 25.89		
17 5 43 10.9		23 27 41.17				94 54 44.02		
19 5 36 6.7		23 28 30.21				94 49 1.96		

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF JUPITER (*Continued*)

M an S lar Tim f	P i t Ob-	A R from	A R f m	E f N A	P i t Ol	N P D fr m	N P D	E f N A
Obs ti	d	Ob rv ti	N A		d	Obs i	fr m N A.	
1832								
D c 20 5 32 37 1	1 & 2	23 28 55 47			C	94 46 59 1		
24 5 18 39 2		23 30 41 45				94 33 43 14		
1833								
J e 29 19 24 53 9		1 56 31 07				79 21 57 72		
July 8 18 54 35 3		2 1 36 25				78 56 3 88		
12 18 40 54 1		2 3 39 19				78 45 52 83		
13 18 37 27 9		2 4 8 39				78 43 48 11		
Oct 13 12 32 49 5		2 1 13 44				79 16 34 76		
14 12 28 23 3		2 0 43 38				79 18 14 30		
15 12 23 57 1		2 0 13 11				79 21 57 63		
20 12 1 44 4		1 57 39 19				79 35 43 14		
22 11 52 51 6		1 56 38 07				79 41 15 50		
23 11 48 2 0		1 56 7 13				79 44 1 87		
Nov 9 10 33 7 1		1 47 38 66				80 28 54 09		
17 9 58 12 3		1 44 9 94				80 46 45 43		
19 9 49 33 5		1 43 23 55				80 50 44 13		
20 9 45 14 7		1 42 59 88				80 52 37 89		
21 9 40 57 1		1 42 37 39				80 54 28 63		
22 8 36 38 9		1 42 16 28				80 56 15 05		
23 9 32 22 8		1 41 55 81				80 57 59 96		
Dec 2 8 54 21 0		1 39 17 11				81 10 32 87		
4 8 46 2 0		1 38 49 37				81 12 32 82		
5 8 41 53 0		1 38 36 73				81 13 27 41		
6 8 37 45 0		1 38 25 00				81 14 17 05		
7 8 33 37 9		1 38 13 63				81 14 58 95		
8 8 20 31 3		1 38 2 92				81 15 45 43		
10 8 21 20 3		1 37 43 55				81 16 54 49		
11 8 17 17 2		1 37 36 20				81 17 19 95		
14 8 5 9 5		1 37 16 15				81 18 17 77		
18 7 48 59 8		1 37 0 14				81 18 29 70		
19 7 45 0 0		1 36 58 43				81 18 20 09		
20 7 41 8 2		1 36 57 17				81 18 8 37		
22 7 33 23 0		1 36 56 91				81 17 28 27		
24 7 25 34 3		1 37 0 17				81 16 25 76		
25 7 1 42 6		1 37 2 79				81 15 55 24		
26 7 17 48 7		1 37 6 33				81 15 11 74		
27 7 13 57 2		1 37 10 68				81 14 28 62		
29 7 6 16 8		1 37 22 24				81 12 44 56		
30 7 2 27 4		1 37 28 69				81 11 46 50		
31 6 58 38 2		1 37 35 57				81 10 44 20		
1834								
Jan 10 6 21 13 9	C	1 39 30 44	30 59	+ 0 15				
14 6 6 36 9	1 & 2	2 40 36 93	36 98	+ 0 05		80 48 45 64	42 65	— 2 99
19 5 48 35 9	O	2 42 15 55	15 63	+ 0 08		80 37 51 32	46 10	— 5 22
1835								
Feb 2 7 10 54 6	1 & 2	3 59 2 78	3 14	+ 0 36		70 5 36 82	33 42	— 3 40
4 7 3 14 8		3 59 15 50	16 21	+ 0 71		70 4 30 31	26 60	— 3 71
6 6 55 39 4		3 59 32 22	32 60	+ 0 38		70 3 15 11	10 43	— 4 68
7 6 51 53 7		3 59 41 59	42 04	+ 0 45		70 2 32 70	28 91	— 3 71
8 6 48 7 8		3 59 51 85	52 28	+ 0 43		70 1 48 85	45 16	— 3 69
9 6 44 23 4		4 0 2 94	3 31	+ 0 37		70 1 4 55	59 09	— 5 46
10 6 40 38 8		4 0 14 99	15 19	+ 0 20		70 0 16 36	10 86	— 5 50
11 6 36 53 9		4 0 27 69	27 94	+ 0 25		69 59 24 46	20 23	— 4 23
Sept 26 18 39 3 0		6 59 33 67	33 71	+ 0 04		67 22 53 86	51 36	— 2 50

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF JUPITER (*Continued*)

M	S	lar	Time	f	P	intOb-	A	R	fr	m	A	R	from	Err	f	N	A	P	i	t	Ob	N	P	D	fr	m	N	P	D	from	Err	f	N	A
Ob	st				rv	d	Ob	rv	st		N	A						rv			st	Ob	rv	st		N	A							
1835				m																														
S pt	29	18	29	20 0	1 & 2		7	0	57 87		57	69		- 0 18				C				67	24	40	10		36	22		-	3	88		
Dec	21	12	55	14 9	C		6	53	51 03		51	48		+ 0 45								67	4	58	62		57	41		-	1	21		
	24	12	41	46 9	1 & 2		6	52	10 10		10	26		+ 0 16								67	2	25	59		23	63		-	1	96		
	25	12	37	16 8			6	51	35 74		36	05		+ 0 31								67	1	35	64		32	63		-	3	01		
	26	12	32	46 6			6	51	1 58		1	65		+ 0 07								67	0	45	98		41	8		-	4	13		
	27	12	28	15 6			6	50	26 90		27	08		+ 0 18								66	59	53	56		51	32		-	2	24		
	28	12	23	45 7			6	49	52 43		52	36		- 0 07								66	59	3	92		1	18		-	2	74		
	30	12	14	44 5			6	48	42 54		42	61		+ 0 07								66	59	54	66		57	22	01					
1836																																		
Jan	2	12	1	12 0			6	46	57 33		57	60		+ 0 27								66	54	56	38		56	56		+	0	18		
	6	11	43	9 0			6	44	37 85		37	99		+ 0 14								66	51	52	83		49	84		-	2	99		
	7	11	38	38 4			6	44	3 14		3	29		+ 0 15								66	51	5	93		4	77		-	1	16		
	8	11	34	8 3	C		6	43	28 57		28	75		+ 0 18								66	50	22	28		20	20		-	2	08		
	9	11	29	38 4	1 & 2		6	42	54 34		54	39		+ 0 05								66	49	37	31		36	53		-	0	78		
	11	11	20	37 9			6	41	46 14		46	25		+ 0 11								66	48	11	81		11	25		-	0	56		
	13	11	11	39 4			6	40	39 09		39	12		+ 0 03								66	46	49	58		48	77		-	0	81		
	14	11	7	9 7			6	40	6 08		5	99		- 0 09								66	46	10	96		8	66		-	2	30		
	16	10	58	12 8			6	39	0 08		0	71		+ 0 63								66	44	52	39		50	84		-	1	5		
	19	10	44	50 6			6	37	25 43		25	65		+ 0 22								66	43	5	56		0	23		-	5	33		
	20	10	40	24 0			6	36	54 52		54	84		+ 0 32								66	42	28	95		24	94		-	4	01		
	24	10	22	41 9	C		6	34			56	47										66	40	14	38		12	38		-	2	00		
	31	9	52	6 8	1 & 2		6	31	51 27		51	29		+ 0 02								66	36	53	48		52	31		-	1	17		
F b	1	9	47	46 8			6	31	27 27		27	39		+ 0 12								66	36	29	04		26	97		-	2	07		
	2	9	43	27 4			6	31	3 90		4	17		+ 0 27								66	36	2	16		2	49		-	0	33		
	3	9	39	9 4			6	30	41 60		41	65		+ 0 05								66	35	40	23		38	78		-	1	45		
	4	9	34	51 7			6	30	19 84		19	84		0 00								66	35	16	22		16	79		-	0	43		
	5	9	30	34 5			6	29	58 75		58	75		0 00								66	34	54	85		53	60		-	1	25		
	7	9	22	3 6			6	29	18 81		18	79		- 0 02								66	34	13	25		11	49		-	1	76		
	8	9	17	48 5			6	29	0 09		59	92		- 0 17								66	33	53	45		51	54		-	1	91		
	10	9	9	20 9			6	28	24 60		24	52		- 0 08								66	33	16	03		13	79		-	2	24		
	11	9	5	8 9			6	28	8 03		8	00		- 0 03								66	32	57	38		55	98		-	1	40		
	13	8	56	46 3			6	27	37 10		37	36		+ 0 26								66	32	24	88		22	58		-	2	30		
	14	8	52	36 9			6	27	23 24		23	26		+ 0 02								66	32	8	28		6	92		-	1	36		
	15	8	48	27 2			6	27	9 76		9	98		+ 0 22								66	31	54	68		51	88		-	2	80		
	16	8	44	19 0			6	26	57 69		57	54		- 0 15								66	31	39	28		37	49		-	1	79		
	17	8	40	11 5			6	26	45 92		45	95		+ 0 03								66	31	27	36		23	64		-	3	72		
	18	8	36	5 0			6	26	36 06		36	18		+ 0 12								66	31	14	75		10	56		-	4	19		
	21	8	23	50 5			6	26	8 13		8	00		- 0 13								66	30	39	23		36	12		-	4	11		
	23	8	15	44 9			6	25	54 10		54	14		+ 0 04								66	30	14	91		14	51		-	0	40		
	26	8	3	42 6			6	25	39 63		39	84		+ 0 21								66	29	51	22		48	20		-	3	02		
	27	7	59	43 6			6	25	36 69		36	82		+ 0 13								66	29	41	90		40	59		-	1	31		
Mar	14	6	57	55 1	C		6	26	43 43		43	37		- 0 06								66	28	57	47		57	62		+	0	15		
	17	6	46	43 8			6	27	19 37		19	45		+ 0 08								66	29	8	88		6	14		-	2	74		
	18	6	43	1 2			6	27	32 89		33	08		+ 0 19								66	29	9	88		10	15		+	0	27		
	19	6	39	20 2			6	27	47 77		47	50		- 0 27																				
June	15	1	50	53 8	1 & 2		7	25	30 59		30	09		- 0 50								67	41	0	63		7	25		-	6	62		
Sept	9	21	27	1 2	C		8	43	54 63		54	42		- 0 21								71	23	45	49		42	37		-	3	12		
	12	21	17	34 2			8	46	16 02		15	92		- 0 10								71	32	26	23		24	77		-	1	46		
	20	20	52	8 8			8	52	19 45		18	96		- 0 49								71	55	15	17		13	16		-	2	01		
Oct.	2	20	13	17 3			9	0	39 90		39	61		- 0 29								72	27	38	85		39	48		+	0	63		
	3	20	10	0 2			9	1	18 98		18	69		- 0 29								72	30	15	00		14	13		-	0	87		
	6	20	0	7 5			9	3	13 54		13	30		- 0 24								72	37	50	50		49	40		-	1	10		
	12	19	40	4 2			9	6	49 94		49	94		0 00								72	52	17	48		16	79		-	0	69		

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF JUPITER (*Continued*)

M an S lar Tim f	P l t Ob- rv d	A R from Ob atl	A. R fr m N A	Erro f N A	P lnt Ob rv d	N P D f m Ob rv ti	N P D fr m N A	Erro f N A
1836								
Oct 13 19 36 46 0	C	9 7 24 46	24 35	— 0 11	C	72 54 38 01	35 31	— 2 70
14 19 33 24 3		9 7 58 53	58 22	— 0 31		72 56 53 50	51 97	— 1 53
19 19 16 21 1		9 10 40 39	39 89	— 0 50		73 7 49 39	45 08	— 4 31
1837								
Jan 26 12 43 19 7	1 & 2	9 6 49 00	48 30	— 0 70		72 29 17 19	14 28	— 2 91
27 12 38 52 4		9 6 17 72	16 88	— 0 84		72 26 52 30	49 97	— 2 33
28 12 34 24 4		9 5 46 19	45 35	— 0 84		72 24 26 78	25 65	— 1 13
29 12 29 57 4		9 5 14 30	13 67	— 0 63		72 22 1 94	1 41	— 0 53
31 12 21 1 9		9 4 10 71	10 03	— 0 68		72 17 14 91	13 55	— 1 36
Feb 2 12 12 7 1	C	9 3 6 95	6 18	— 0 77		72 12 31 93	27 25	— 4 68
3 12 7 38 2	1 & 2	9 2 35 13	34 24	— 0 89		72 10 7 90	4 98	— 2 92
4 12 3 10 6		9 2 3 31	2 33	— 0 98		72 7 46 41	43 40	— 3 01
5 11 58 42 8		9 1 31 10	30 45	— 0 65		72 5 24 76	22 56	— 2 20
6 11 54 16 4		9 0 59 56	58 65	— 0 91		72 3 6 21	2 67	— 3 54
7 11 49 48 8		9 0 27 79	26 95	— 0 84		72 0 45 05	43 78	— 1 27
8 11 45 21 5		8 59 56 18	55 37	— 0 81		71 58 28 81	26 04	— 2 77
9 11 40 53 7		8 59 24 85	23 93	— 0 92		71 56 12 74	9 58	— 3 16
10 11 36 27 1		8 58 53 50	52 67	— 0 83		71 53 56 72	54 36	— 2 36
11 11 31 59 2		8 58 22 30	21 59	— 0 71		71 51 45 08	40 57	— 4 51
12 11 27 33 5		8 57 51 39	50 75	— 0 64		71 49 29 75	28 37	— 1 38
13 11 23 6 8		8 57 21 05	20 11	— 0 94		71 47 20 16	17 60	— 2 56
14 11 18 40 9		8 56 50 52	49 74	— 0 78		71 45 10 51	8 66	— 1 85
15 11 14 14 9		8 56 20 46	19 62	— 0 84		71 43 4 26	1 35	— 2 91
17 11 5 23 8		8 55 21 05	20 39	— 0 66		71 38 54 87	52 34	— 2 53
18 11 0 58 4	C	8 54 52 10	51 27	— 0 83		71 36 54 33	50 78	— 3 55
19 10 56 33 7	1 & 2	8 54 23 22	22 51	— 0 71		71 34 54 09	51 25	— 2 84
20 10 2 9 7	C	8 53 54 95	54 15	— 0 80		71 32 53 92	53 78	— 0 14
21 10 47 45 5		8 53 26 69	26 19	— 0 50		71 31 3 21	30 58 44	— 4 77
26 10 25 53 7		8 51 13 59	12 92	— 0 67		71 21 58 08	56 26	— 1 82
27 10 21 32 3		8 50 48 41	47 74	— 0 67		71 20 17 47	15 10	— 2 37
1838								
Mar 3 12 18 52 0	1 & 2	11 3 17 57	16 43	— 1 14		82 21 9 39	7 17	— 2 22
5 12 10 3 2		11 2 19 56	18 47	— 1 09		82 15 2 86	14 59 07	— 3 79
7 12 1 13 9		11 1 21 61	20 53	— 1 08		82 8 55 82	53 29	— 2 53
8 11 56 48 8		11 0 52 76	51 62	— 1 14		82 5 54 40	51 57	— 2 83
9 11 52 24 0	C	11 0 23 60	22 75	— 0 85		82 2 52 76	50 82	— 1 94
10 11 47 59 5	1 & 2	10 59 55 04	54 00	— 1 04		81 59 54 75	51 14	— 3 61
11 11 43 35 4		10 59 26 40	25 33	— 1 07		81 56 56 11	52 63	— 3 48
12 11 39 10 6		10 58 57 70	56 78	— 0 92		81 53 58 69	55 42	— 3 27
13 11 34 46 5	C	10 58 29 56	28 38	— 1 18		81 51 2 96	50 59 66	— 3 30
14 11 30 22 4	1 & 2	10 58 1 19	0 15	— 1 04		81 48 9 95	5 50	— 4 45
15 11 25 58 3		10 57 33 33	32 15	— 1 18		81 45 16 75	12 97	— 3 78
16 11 21 34 9		10 57 5 32	4 29	— 1 03		81 42 25 62	22 25	— 3 37
17 11 17 11 6		10 56 37 68	36 68	— 1 00		81 39 37 58	33 38	— 4 20
18 11 12 48 2		10 56 10 39	9 31	— 1 08		81 36 48 31	46 56	— 1 75
23 10 50 56 3		10 53 57 73	56 69	— 1 04		81 23 29 76	26 02	— 3 74
24 10 46 35 0		10 53 32 15	31 15	— 1 00		81 20 56 81	53 41	— 3 40
25 10 42 14 4		10 53 6 99	5 96	— 1 03		81 18 27 22	23 49	— 3 73
April 2 10 7 41 6		10 50 1 30	59 98	— 1 32		81 0 18 56	14 39	— 4 17
21 8 47 57 0	C	10 44 58 09	57 24	— 0 85		80 32 38 50	38 40	— 0 10
Nov 23 20 34 50 1		12 45 23 01	22 30	— 0 71		93 35 51 35	50 04	— 1 31
Dec 10 19 38 1 8		12 55 27 12	26 72	— 0 40		94 36 14 47	13 49	— 0 98
1839								
Mar 25 12 47 33 7	1 & 2	12 57 50 67	49 82	— 0 85		94 27 14 61	15 69	+ 1 08
26 12 43 10 5		12 57 23 12	22 32	— 0 80		94 24 18 23	19 97	+ 1 74

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF JUPITER (Continued)

M	S	lar	T	m	f	P	t	Ob	A	R	f	r	m	E	f	N	A	P	t	Ob	N	I	D	f	r	m	N	P	D	Err	f	N	A
Ob	r	v	t			d			Ob	r	v	t	N	A				d		Ob	r	v	t			from	N	A					
1839					m																												
Mar	27	12	38	47	1	1	&	2	12	56	55	43	54	62	—	0	81	C	94	21	22	87	23	45				+	0	58			
	28	12	34	23	7				12	56	27	66	26	75	—	0	90		94	18			26	25									
	29	12	29	59	5				12	56	59	51	58	75	—	0	76		94	15	27	11	28	59			+	1	48				
	30	12	25	35	6				12	55	31	50	30	63	—	0	87		94	12	31	56	30	59			—	0	97				
	31	12	21	11	6				12	55	3	35	2	43	—	0	92		94	9	32	10	32	11			+	0	01				
Ap	1	2	12	12	23	4		C	12	54	6	50	5	6	—	0	74		94	3	34	39	34	77			+	0	38				
	3	12	7	58	9				12	53	38	18	37	38	—	0	80		94	0	35	18	36	05			+	0	87				
	4	12	3	35	2				12	53	9	93	8	96	—	0	97		93	57	38	31	37	56			—	0	75				
	5	11	59	10	3		1	&	12	52	41	47	40	54	—	0	93		93	54	37	12	39	30			+	2	18				
	6	11	54	46	3			C	12	52	13	12	12	13	—	0	99		93	51	41	35	41	51			+	0	16				
	7	11	50	22	4		1	&	12	51	44	82	43	76	—	1	06		93	48	44	20	44	33			+	0	13				
	8	11	45	67	9				12	51	16	27	15	42	—	0	85		93	45	47	33	47	84			+	0	1				
	11	11	32	46	6				12	49	51	86	50	98	—	0	88		93	37	1	68	3	27			+	1	33				
	13	11	23	58	8				12	48	56	29	55	30	—	0	99		93	31	16	72	19	20			+	2	48				
	14	11	19	35	1				12	48	28	71	27	73	—	0	98		93	28	28	81	29	32			+	0	51				
	15	11	15	12	4				12	48	1	46	0	35	—	1	11		93	25	38	65	38	57			—	0	08				
	16	11	10	49	2				12	47	34	09	33	18	—	0	91		93	22	53	24	4	33			+	1	03				
	17	11	6	26	3				12	47	7	23	6	29	—	0	94		93	20	7	15	9	2			+	2	37				
	18	11	2	3	9				12	46	40	60	39	61	—	0	99		93	17	24	85	26	58			+	1	73				
	20	10	53	19	9				12	45	48	07	47	08	—	0	99		93	12	6	28	7	18			+	0	90				
	25	10	31	34	7				12	43	42	30	41	38	—	0	92		92	59	29	44	29	37			—	0	07				
	27	10	22	55	2				12	42	54	50	53	68	—	0	82		92	54	44	17	44	72			+	0	55				
	28	10	18	36	2				12	42	31	40	30	41	—	0	99		92	52	27	05	26	53			—	0	52				
	29	10	14	16	4				12	42	8	51	7	57	—	0	94		92	50	10	82	11	36			+	0	54				
May	1	10	5	41	6				12	41	23	97	23	27	—	0	70		92	45	51	28	50	29			—	0	99				
	2	10	1	24	2			C	12	41	2	67	1	78	—	0	89		92	43	43	95	44	62			+	0	67				
	4	9	52	49	7		1	&	12	40	21	16	20	28	—	0	88		92	39	44	12	43	04			—	1	08				
	7	9	40	4	6				12	39	22	68	21	73	—	0	95		92	34	6	51	6	47			—	0	04				
	8	9	35	50	5				12	39	4	21	3	26	—	0	95		92	32	21	23	21	41			+	0	18				
	9	9	31	36	7				12	38	46	15	45	33	—	0	82		92	30	39	61	39	99			+	0	38				
	10	9	27	23	5				12	38	28	90	27	95	—	0	95		92	29	2	44	2	35			—	0	09				
	20	8	45	43	2			C	12	36	7	32	6	9	—	0	73		92	16	25	20	24	16			—	1	04				
	21	8	41	36	7		1	&	12	35	56	54	55	84	—	0	70		92	15	31	29	30	91			—	0	38				
	24	8	29	20	2				12	35	27	84	27	40	—	0	44		92	13	15	53	16	50			+	0	97				
	25	8	25	16	6				12	35	20	04	19	19	—	0	85		92	12	41	66	40	15			—	1	51				
1840																																	
J	23	8	21	7	9			C	12	28	30	50	29	82	—	0	68		103	26	57	48	27	06			+	3	20				
1841																																	
J	26	10	25	44	6				16	44	20	07	19	83	—	0	24		111	42	44	62	47	40			+	2	78				
Aug	24	6	25	15	9				16	35	47	81	47	67	—	0	14																
	29	6	6	52	7				16	37	4	47	4	45	—	0	02		111	41	25	04	27	76			+	2	72				
	30	6	3	14	0				16	37	22	33	21	99	—	0	34		111	42	14	38	13	57			—	0	81				
	31	5	59	37	5				16	37	40	31	40	23	—	0	08		111	43	1	04	0	49			—	0	5				
S	pt	10	5	23	57	5			16	41	21	00	20	94	—	0	06		111	51	47	00	51	72			+	4	72				
	13	5	13	28	8				16	42	40	46	40	24	—	0	22		111	54	46	99	50	70			+	3	71				
	14	5	9	59	4				16	43	8	29	7	99	—	0	30		111	55	49	86	51	93			+	2	07				
	20	4	49	24	2				16	46	7	72	7	60	—	0	12		112	2	10	33	15	16			+	4	83				
	21	4	46	0	3				16	46	39	73	39	69	—	0	04		112	3	19	65	21	29			+	1	64				
	23	4	39	13	8				16	47	45	58	45	59	—	0	01																
	24	4	35	2	0				16	48	19	76	19	92	—	0	16																
	25	4	32	30	5				16	48	54	32	53	85	—	0	47		112	7	49	83	51	01			+	1	18				
Oct	6	3	56	9	1				16	55	48	61	48	12	—	0	49		112	20	39	09	40	62			+	1	53				
	7	3	52	53	4				16	56	29	17	28	88	—	0	29																
	19	3	14	27	0				17	5	15	04	14	68	—	0	46																

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF JUPITER (*C nt ued*)

M an S l	Tim f	P int Ob	A R f m	A R from	Erro f N A	P i Ob	N P D fr m	N P D	Erro f N A
Ob tl n.		d.	Ob l	N A		d	Ob tl	f m N A	
1841									
Oct 26	2 52 292	C	17 10 49 74	49 53	— 0 21	C			
Nov 16	1 48 159		17 29 13 93	13 86	— 0 07				
18	1 42 157		17 31 5 71	5 43	— 0 28				
19	1 39 161		17 32 2 21	1 54	— 0 67				
22	1 30 175		17 34 51 81	51 17	— 0 64				
23	1 27 180		17 35 48 31	48 11	— 0 20				
1842									
Feb 14	21 17 4 6		18 56 44 90	45 17	+ 0 27		112 45 17 29	18 60	+ 1 31
Ap l 3	18 40 57 8		19 28 46 52	14 59					
6	18 30 57 8		19 30 34 38	34 44	+ 0 06		111 51 8 66	10 79	+ 2 13
11	18 13 17 2		19 32 33 34	33 45	+ 0 11		111 47 26 02	27 52	+ 1 50
12	18 9 42 3		19 32 51 87	55 18	+ 0 31		111 46 46 26	47 01	+ 0 75
15	17 8 56 2		19 33 56 04	56 01	— 0 03		111 44 50 95	54 14	+ 3 19
June 23				2 87		N	112 12 5 31	7 10	+ 1 79
July 9	12 8 34 8		19 17 35 39	35 09	— 0 30	C	112 30 59 85	31 2 36	+ 2 51
13	11 50 29 4		19 15 23 57	23 09	— 0 48		112 35 34 51	37 55	+ 3 04
19	11 23 39 7		19 12 7 45	7 54	+ 0 09		112 42 8 12	9 55	+ 1 43
22	11 10 17 1		19 10 32 19	32 20	+ 0 01		112 45 13 11	14 82	+ 1 71
A g 8	9 55 28 8		19 2 34 68	33 99	— 0 69		112 59 49 98	50 81	+ 0 83
Sept 2	8 10 53 6		18 56 15 44	14 95	— 0 49		113 10 55 36	53 87	— 1 49
4	8 2 52 4		18 56 5 85	5 56	— 0 29		113 11 16 61	14 74	— 1 87
16	7 15 54 8		18 56 19 29	19 18	— 0 11		113 11 39 72	39 72	0 00
17	7 12 6 4		18 56 26 22	25 69	— 0 53		113 11 34 45	34 24	— 0 21
23	6 49 25 9		18 57 22 39	21 91	— 0 48		113 10 37 14	36 79	— 0 35
27	6 34 35 8		18 58 15 87	15 35	— 0 52		113 9 33 57	34 98	+ 1 41
Oct 1	6 20 8 2		18 59 21 97	21 33	— 0 64		113 8 15 13	13 76	— 1 37
4	6 9 8 0		19 0 19 35	18 87	— 0 48		113 6 59 93	59 81	— 0 12
5	6 5 32 3		19 0 39 67	39 56	— 0 11		113 6 32 09	32 64	+ 0 55
6	6 1 57 4		19 1 0 97	0 99	+ 0 02		113 6 1 92	4 17	+ 2 25
1843									
M 31	20 52 30 3		21 27 53 96	54 06	+ 0 10		105 37 11 57	12 55	+ 0 98
Apr l 5	20 36 30 4			34 22			105 20 26 54	29 56	+ 3 02
10	20 20 20 2		21 35 4 26	4 25	— 0 01		105 4 18 24	22 87	+ 4 63
11	20 17 3 7		21 35 44 72	44 98	+ 0 26		105 1 12 10	14 40	+ 2 30
12	20 13 49 5		21 36 25 18	25 29	+ 0 11		104 58 5 30	7 64	+ 2 29
18	19 54 5 8		21 40 17 61	17 73	+ 0 12		104 40 3 38	5 45	+ 2 07
27	19 23 57 9		21 45 34 16	34 08	— 0 08		104 15 20 72	22 71	+ 1 99
28	19 20 34 5		21 46 6 73	6 68	— 0 00		104 12 46 72	49 69	+ 2 97
Aug 23	11 31 45 4		21 37 18 10	18 45	+ 0 35		105 24 49 81	50 35	+ 0 54
Sept 5	10 34 30 6		21 31 8 47	8 44	— 0 03		105 55 21 68	24 42	+ 2 74
8	10 21 25 3		21 29 51 86	51 91	+ 0 00		106 1 31 03	32 37	+ 1 34
9	10 17 6 1		21 29 27 22	27 28	+ 0 06		106 3 27 72	29 54	+ 1 82
13	9 59 49 0		21 27 53 83	53 86	+ 0 03		106 10 48 10	49 16	+ 1 06
14	9 55 31 3		21 27 31 78	31 85	+ 0 07		106 12 31 72	31 53	— 0 19
22	9 21 30 8		21 24 57 44	57 69	+ 0 25				
23	9 17 18 7		21 24 41 35	41 34	— 0 01		106 25 25 00	25 27	+ 0 27
24	9 13 6 3		21 24 25 75	25 70	— 0 05		106 26 32 13	34 09	+ 1 96
26	9 4 45 8		21 23 56 50	56 54	+ 0 04		106 28 40 01	40 86	+ 0 85
30	8 48 13 6		21 23 7 38	6 98	— 0 40		106 32 7 19	10 44	+ 3 25

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF JUPITER (C n t n u l)

M an S lar Tim f	P int Ob	A R fr m	A. R. from	Err f N A.	P ln Ob	N P D f m	N P D	E f N A
Ob rv tl	er ed.	Ob tl	N A.		erv d	Ob tl	fr m N A	
1843								
Oct. 1 8 44 65	C	21 22 56 59	56 45	—0 14	C	106 32 51 52	53 58	+ 2 06
2 8 40 05		21 22 46 79	46 71	—0 08		106 33 32 87	32 95	+ 0 08
3 8 35 53 6		21 22 37 72	37 69	—0 03		106 34 6 48	8 63	+ 2 15
4 8 31 51 8		21 22 29 69	29 46	—0 23		106 34 38 81	40 53	+ 1 72
5 8 27 48 8		21 22 21 88	21 99	+ 0 11		106 35 7 01	8 75	+ 1 74
12 7 59 46 9		21 21 51 74	51 56	—0 18		106 36 38 39	41 15	+ 3 06
13 7 55 49 3		21 21 50 49	50 36	—0 13		106 36 36 69	39 73	+ 2 84
15 7 47 57 1		21 21 50 50	50 32	—0 18		106 36 22 22	24 98	+ 2 76
18 7 36 16 1		21 21 56 66	56 19	—0 47		106 35 31 57	31 70	+ 3 13
19 7 32 23 0		21 21 59 80	59 75	—0 05		106 35 9 11	10 42	+ 1 31
22 7 20 51 0		21 22 15 36	15 14	—0 22		106 33 34 62	35 19	+ 0 57
23 7 17 2 8		21 22 21 96	21 85	—0 11		106 32 52 33	55 98	+ 3 65
24 7 13 11 0		21 22 29 64	29 34	—0 30		106 32 10 56	13 09	+ 2 53
25 7 9 25 8		21 22 37 77	37 62	—0 16		106 31 26 46	26 45	— 0 01
N v 2 6 39 35 0		21 24 12 06	11 62	—0 44		106 23 0 51	2 48	+ 1 97
D 9			49 86			104 57 51 32		
1844								
J 26 1 58 46 6		22 17 47 10	46 93	—0 17		101 37 21 99	24 62	+ 2 63
28 1 52 38 9		22 19 31 78	31 62	—0 16				
29 1 49 35 1		22 20 24 62	24 18	—0 44				
F b 2 1 37 22 7			55 63					
Ap l 22 21 29 27 5		23 34 40 62	40 30	—0 32		93 52 54 56	5 87	+ 1 31
24 21 24 38 3		23 36 13 13	13 44	+ 0 31		93 43 14 16	1 06	+ 0 90
30 21 4 4 9		23 40 46 48	46 31	—0 17		93 14 50 63	54 43	+ 3 80
M y 1 21 0 53 3		23 41 30 58	30 78	+ 0 20		93 10 15 45	17 72	+ 2 27
2 20 57 41 4		23 42 15 05	14 94	—0 11		93 5 40 16	42 82	+ 2 66
3 20 54 29 4		23 42 58 94	58 83	—0 11		93 1 7 50	9 51	+ 2 44
9 20 35 9 5		23 47 14 99	15 44	+ 0 45		92 34 35 97	36 41	+ 0 47
Sept 17 12 13 32 3		0 0 44 45	44 32	—0 13		91 41 0 49	0 01	— 0 48
21 11 55 52 9		23 58 47 53	47 21	—0 32		91 53 50 96	51 64	+ 0 68
22 11 51 27 2		23 58 18 09	17 86	—0 23				
23 11 47 1 6		23 57 48 60	48 54	—0 06		92 0 14 86	15 23	+ 0 37
24 11 42 36 3		23 57 19 56	19 30	—0 26		92 3 25 24	25 95	+ 0 71
25 11 38 11 4		23 56 50 03	50 00	—0 03		92 6 36 67	35 90	— 0 77
26 11 33 46 3		23 56 21 00	20 82	—0 18		92 9 43 45	44 97	+ 1 52
28 11 24 56 6		23 55 22 81	22 81	0 00		92 16 0 60	15 926	— 1 34
29 11 20 32 4		23 54 54 03	54 00	—0 03		92 19 6 21	4 33	— 1 88
30 11 16 7 7		23 54 25 33	25 36	+ 0 03		92 22 8 97	7 88	— 1 09
Oct 1 11 11 43 8		23 53 57 33	56 90	—0 43		92 25 9 60	9 79	+ 0 19
2 11 7 20 1		23 53 28 83	28 64	—0 19		92 28 8 31	10 13	+ 1 82
3 11 2 57 1		23 53 0 32	0 72	+ 0 40		92 31 6 45	7 89	+ 1 44
10 10 32 16 8		23 49 52 67	52 41	—0 26		92 50 45 24	48 27	+ 3 03
14 10 14 54 3		23 48 13 64	13 04	—0 60		93 0 56 84	59 35	+ 2 51
18 9 57 38 6		23 46 41 09	41 13	+ 0 04		93 10 10 27	14 99	+ 4 72
19 9 53 21 9		23 46 20 16	19 46	—0 70		93 12 22 69	24 56	+ 1 87
21 9 44 48 6		23 45 38 53	37 74	—0 79		93 16 29 39	31 85	+ 2 46
22 9 40 30 9		23 45 17 83	17 77	—0 06		93 18 25 79	29 42	+ 3 63
23 9 36 16 6		23 44 58 81	58 34	—0 47		93 20 17 79	22 92	+ 5 13
24 9 32 0 3		23 44 39 58	39 52	—0 06		93 22 8 73	12 06	+ 3 33
25 9 27 48 2		23 44 21 73	21 31	—0 42		93 23 55 54	56 99	+ 1 45
26 9 23 34 5		23 44 4 02	3 72	—0 30		93 25 32 64	37 58	+ 4 94
27 9 19 22 3		23 43 47 53	46 76	—0 77		93 27 11 95	13 83	+ 1 88

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF JUPITER (*Continued*)

M	S	lar	Tim	f	P	t	Ob	A	R	f	m	A	R	f	m	Err	f	N	A	P	t	Ob	N	P	D	from	N	P	D	fr	m	Err	f	N	A
Ob	i						ed	Ob	ti			N	A							rv	d	Ob	vati	n.	N	A									
1844																																			
O t	28	9	15	9.8			C	23	43	30	94	30	50			—0.44				C		93	28	44	39	45	63			+	1	24			
	29	9	10	58.4				23	43	15	33	14	80			—0.53						93	30	10	59	13	03			+	2	44			
	30	9	6	47.3				23	43	0	14	50	79			—0.35						93	31	33	12	35	79			+	2	67			
	31	9	2	36.5				23	42	46	70	45	47			—0.23						93	32	53	70	53	91			+	0	21			
Nov	2	8	54	18.7				23	42	19	26	18	83			—0.43						93	35	13	23	16	18			+	2	95			
	3	8	50	10.4				23	42	6	95	6	57			—0.38						93	36	16	93	20	20			+	3	27			
	4	8	46	3.0				23	41	55	47	55	00			—0.47						93	37	15	65	19	57			+	3	92			
	5	8	41	56.1				23	41	44	48	44	14			—0.34						93	38	9	28	14	03			+	4	75			
	6	8	37	50.3				23	41	34	42	34	00			—0.42						93	39	0	02	3	62			+	3	60			
	8											15	92									93	40	25	17	28	07			+	2	90			
	9	8	25	36.6				23	41	8	32	7	98			—0.34						93	40	58	81	2	90			+	4	09			
	10	8	21	34.2				23	41	1	22	0	78			—0.44						93	41	29	49	32	66			+	3	17			
	11	8	17	31.8				23	40	54	60	54	33			—0.27						93	41	54	92	57	56			+	2	64			
	12	8	13	29.7				23	40	49	08	48	63			—0.45						93	42	13	31	17	38			+	4	07			
	13	8	9	29.2				23	40	44	15	43	68			—0.47						93	42	28	33	32	28			+	3	95			
	14	8	5	29.2				23	40	40	26	39	50			—0.76						93	42	37	15	42	15			+	5	00			
	15	8	1	29.3				23	40	36	47	36	07			—0.40						93	42	42	48	46	98			+	4	50			
	16	7	57	30.6				23	40	33	80	33	42			—0.38						93	42	42	70	46	84			+	4	14			
	17	7	53	32.9				23	40	32	01	31	52			—0.49						93	42	38	67	41	63			+	2	96			
	18	7	49	35.4				23	40	30	76	30	42			—0.34						93	42	26	37	31	41			+	5	04			
	19	7	45	39.6				23	40	30	43	29	99			—0.44						93	42	13	58	16	24			+	2	66			
	20	7	41	45.9				23	40	30	75	30	36			—0.39						93	41	52	09	56	09			+	4	00			
	21	7	37	49.1				23	40	32	03	31	51			—0.52						93	41	27	8	30	98			+	3	40			
	22	7	33	55.3				23	40	35	82	33	39			—0.43						93	40	59	19	61	01			+	1	82			
	27	7	14	36.8				23	40	54	57	54	15			—0.42						93	37	13	34	17	61			+	4	27			
	28	7	10	47.2				23	41	0	90	0	55			—0.35						93	36	16	48	18	41			+	1	93			
	30	7	3	10.2				23	41	15	92	15	57			—0.35						93	34	34	5	53			+	2	08				
De	4	6	48	4.8				23	41	55	01	54	38			—0.63						93	28	42	19	12	95			+	0	76			
	5	6	44	20.4				23	42	6	46	5	89			—0.57						93	27	9	44	10	63			+	1	19			
	6	6	40	30.7				23	42	18	63	18	14			—0.19						93	25	35	15	33	61			—	1	54			
1844																																			
Ju	2	21	7	56.3				1	53	47	55	47	42			—0.13						79	30	49	89	49	02			—	0	87			
	3	21	4	53.9				1	54	34	87	34	74			—0.13						79	26	36	0	34	73			—	1	77			
	6	20	55	20.1				1	56	55	34	55	15			—0.19						79	14	2	43	4	60			+	2	17			
	8	20	49	0.2				1	58	27	26	27	39			+0.13						79	5	55	07	55	57			+	0	50			
	9	20	45	50.4				1	59	13	42	13	09			—0.33						79	1	54	35	54	41			+	0	06			
	11	20	39	28.6				2	0	43	83	43	63			—0.20						78	53	59	09	59	02			—	0	07			
	12	20	36	17.2				2	1	28	49	28	44			—0.05						78	50	4	54	4	69			+	0	15			
	16	20	23	29.6				2	4	24	75	24	60			—0.15						78	34	52	91	51	07			—	1	84			
	27	19	47	49.5				2	12	1	22	0	94			—0.28						77	56	22	07	21	72			—	0	35			
July	1	19	34	40.2				2	14	35	73	35	49			—0.24						77	43	40	50	40	13			—	0	37			
	2	19	31	21.8				2	15	13	10	13	05			—0.05						77	40	37	90	36	62			—	1	28			
	11	19	1	15.5				2	20	30	70	30	79			+0.09						77	15	12	18	11	44			—	0	74			
	14	18	51	4.8				2	22	8	07	7	97			—0.10						77	7	34	78	35	46			+	0	68			
	20	18	30	29.7				2	25	8	28	8	25			—0.03						76	53	45	40	45	47			+	0	07			
	21	18	27	1.6				2	25	36	43	30	39			—0.04						76	51	34	81	37	91			+	3	10			
Aug	22	16	30	33.2				2	34	58	73	58	65			—0.08						76	12	58	28	56	00			—	2	28			
Oct.	20	12	23	52.5			1 & 2	2	20	15	35	15	28			—0.07						77	33	16	15	17	39			+	1	24			
	23	12	10	34.1				2	18	42	30	42	45			+0.15						77													

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF JUPITER (*Contd.*)

M	S	lar	T	f	l	Ob	A	R	f	m	A	R	f	m	Err	f	N	A	l	int	Ob	N	P	D	f	m	N	I	D	f	m	E	f	N	A
Ob	tl				rv	d	Ob	tl			N	A							d		Ob	rv	tl												
1845																																			
Nov	1	11	30	26.3	1 & 2		2	13	59	78	59	65			-0.13				C		78	4	36	69	31	1					-	51			
	2	11	25	59.4			2	13	28	70	28	36			-0.34						78	7	20		6	58					-	262			
	3	11	21	32.1			2	12	57	33	57	19			-0.14						78	9	41	26	41	00					-	326			
	4	11	17	5.5			2	12	26	28	26	16			-0.12						78	12	17	63	14	50					-	313			
	5	11	12	38.8			2	11	55	56	55	30			-0.26						78	14	48	5	47	09					-	146			
	7	11	3	45.8	C		2	10	53	97	54	18			+0.21						78	19	49	00	48	72					-	028			
	8	10	59	20.0	1 & 2		2	10	23	95	23	97			+0.02						78	22	18	65	17	33					-	132			
	9	10	54	54.0			2	9	53	94	54	00			+0.06						78	24	45	37	41	61					-	076			
	16	10	24	1.0	1 L		2	6	33	51	33	41			-0.10						78	11	4	60	3	78					-	082			
	17	10	19	39.7	1 & 2		2	6	6	44	6	32			-0.12						78	43	14	45	14	89					-	041			
	18	10	15	15.7	1 L		2	5	39	87	39	62			-0.25						78	4	21	53	23	7					-	096			
	19	10	10	55.3	C		2	5	13	50	1	10			-0.10						78	47	30	09	29	6					-	014			
	24	9	49	10.8	1 I		2	3			9	89									78	7	17	59	17	51					-	008			
	25	9	44	53.5	1 & 2		2	2	46	96	46	80			-0.16						78	55	86		6	01					-	264			
	26	9	40	35.2			2	2	21	46	21	31			-0.15						79	0	51	37	51	17					-	000			
	28	9	32	2.1	2 I		2	1	40	91	41	14			+0.23						79	4	9	27	11	16					+	169			
	29	9	27	43.7	1 & 2		2	1	20	17	20	19			+0.02						79		47	43	4	53					-	150			
	30	9	23	27.8			2	1	0	69	0	50			-0.19						79	7	18	62	17	14					-	148			
Dec	1	9	19	12.9	C		2	0	41	27	41	17			-0.10						79	8	44	01	44	68					-	067			
	5	9	2	19.0	1 & 2		1	59	30	2	30	59			+0.07						79	13	55	26	56	76					-	250			
	9	8	45	38.1	2 L		1	58	31	50	31	37			-0.13						79	18	5	46	5	33					-	013			
	10	8	41	29.1			1	58	18	60	18	43			-0.17						79	19	0	57	57	19					-	338			
	11	8	37	19.5	1 & 2		1	58	6	43	6	20			-0.23						79	19	47	81	44	99					-	282			
	12	8	33	13.6	2 L		1	57	56	03	54	74			-0.29						79	20	29	85	28	59					-	126			
	17	8	12	47.3	1 & 2		1	57	8	94	8	90			-0.04						79	23	4	26	2	63					-	163			
	18	8	8	44.3			1	57	2	14	2	05			-0.09						79	23	21	98	20	58					-	140			
	19	8	4	42.2			1	56	56	01	55	97			-0.04						79	23	34	71	31	22					-	049			
	21	7	56	41.3			1	56	46	25	46	18			-0.07						79	23	50	06	48	32					-	174			
	22	7	52	39.7	1 L		1	56	42	53	42	47			-0.06						79	23	51	02	49	57					-	145			
	28	7	29	0.5	1 & 2		1	56	37	05	36	85			-0.20						79	22	20	48	20	05					-	043			
	29	7	25	6.3			1	56	38	92	38	70			-0.22						79	21	50	39	52	04					+	16			
	30	7	21	13.6			1	56	41	52	41	31			-0.18						79	21	16	41	15	90					-	051			
	31	7	17	21.3			1	56	44	90	44	76			-0.14						79	20	38	20	37	64					-	056			
1846																																			
Jan	2	7	9	38.1			1	56	54	11	54	01			-0.10						79	19	8	64	6	71					-	193			
	3	7	5	47.9	C		1	56	59	80	59	80			0.00						79	18	17	65	15	20					-	239			
	4	7	1	59.5	1 & 2		1	57	6	65	6	40			-0.25						79	17	18	99	19	64					-	065			
	6	6	54	22.4			1	57	22	00	21	90			-0.10						79	15	16	28	15	70					-	058			
	10	6	39	18.9	1 L		1	58	2	37	2	04			-0.33						79	10	18	43	18	91					+	048			
	11	6	35	34.4	1 & 2		1	58	14	10	13	98			-0.12						79	8	55	14	54	73					-	041			
	12	6	31	51.6			1	58	26	82	26	6			-0.17						79	7	27	36	26	5					-	080			
	13	6	28	7.7			1	58	40	15	40	05			-0.10						79	5	55	40	51	52					-	088			
	14	6	24	27.0	C		1	58	54	35	54	17			-0.18						79	4	20	12	18	70					-	142			
	15	6	20	46.3			1	59	9	35	9	03			-0.32						79	2	38	81	39	09					+	028			
	16	6	17	5.6	1 & 2		1	59	24	71	24	60			-0.11						79	0	57	33	5	62					-	171			
	19	6	6	8.7			2	0	15	80	15	62			-0.18						78	55	24	00	23	27					-	073			
Apr	1	2	8	6.1	C		2	45	25	18	25	31			+0.13						74	53	46	73	45	03					-	170			
Jly	7	21	13	29.7			4	16	23	11	23	10			-0.01						69	25	54	86	50	41					-	445			
	8	21	10	25.3			4	17	14	67	14	80			+0.13						69	23	44	13	42	44					-	169			
	26	20	14	16.2	1 & 2		4	31	54	78	54	66			-0.12</																				

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF JUPITER (*Continued*)

M an S l T m f	P int Ob-	A R f m	A R f m	Err f N A	P int Ob	N P D f m	N P D	E f N A
Ob rv tl	ed	Ob tl	N A		rv d	Ob rv tl	f m N A	
1846								
A g 26 18 32 57 2	C	4 51 52 21	52 29	+ 0 08	C	68 13 46 67	44 13	— 2 54
No 30 12 5 31 0	1 & 2	4 42 31 78	31 68	— 0 10		68 29 55 51	51 26	— 4 25
Dec 2 11 56 31 2	C	4 41 22 25	22 17	— 0 08		68 31 49 60	46 11	— 3 49
7 11 33 56 9		4 38 28 79	28 54	— 0 25		68 36 39 41	37 93	— 1 48
8 11 29 26 6		4 37 53 99	53 81	— 0 18		68 37 36 93	36 90	— 0 03
9 11 24 56 7		4 37 19 45	19 65	+ 0 20		68 38 35 71	3 28	— 0 43
10 11 20 26 9		4 36 45 35	45 42	+ 0 07		68 39 35 68	33 98	— 1 70
11 11 15 56 4		4 36 11 15	11 42	+ 0 27		68 40 33 60	32 56	— 1 04
12 11 11 26 8		4 35 37 42	37 59	+ 0 17		68 41 32 62	30 93	— 1 69
14 11 2 28 2		4 34 30 35	30 69	+ 0 34		68 43 29 95	26 83	— 3 12
19 10 40 8 1		4 31 48 89	48 99	+ 0 10		68 48 10 89	9 80	— 1 09
22 10 26 48 0	1 & 2	4 30 16 48	16 78	+ 0 30		68 50 55 05	52 21	— 2 84
1847								
Jan 4 9 29 57 8	1 L	4 24 34 00	34 28	+ 0 28		69 0 53 34	50 31	— 3 03
5 9 25 41 6	C	4 24 12 33	12 43	+ 0 10		69 1 28 80	27 06	— 1 74
6 9 21 25 0		4 23 51 25	51 32	+ 0 07		69 2 5 65	2 30	— 3 35
7 9 17 8 8		4 23 30 65	30 93	+ 0 28		69 2 38 86	36 01	— 2 85
11 9 0 11 4		4 22 16 83	16 89	+ 0 06		69 4 38 13	33 99	— 4 14
12 8 55 58 9		4 22 0 13	0 32	+ 0 19		69 5 1 47	59 14	— 2 33
13 8 51 47 4		4 21 44 48	44 54	+ 0 06		69 5 27 19	22 52	— 4 67
15 8 43 26 0		4 21 15 09	15 40	+ 0 31		69 6 7 40	3 74	— 3 66
16 8 39 17 4		4 21 1 90	2 07	+ 0 17		69 6 25 19	21 53	— 3 66
18 8 31 0 9		4 20 37 67	37 91	+ 0 24		69 6 53 43	51 32	— 2 11
19 8 26 54 0		4 20 26 83	27 09	+ 0 26		69 7 6 54	3 24	— 3 30
20 8 22 47 8		4 20 16 71	17 10	+ 0 39		69 7 10 04	13 23	— 1 81
21 8 18 43 7		4 20 7 87	7 96	+ 0 09		69 7 23 14	21 17	— 1 97
23 8 10 36 2		4 19 52 08	52 26	+ 0 18		69 7 34 53	31 05	— 3 48
25 8 2 31 6		4 19 39 68	39 99	+ 0 31		69 7 36 68	32 88	— 3 80
26 7 58 31 0		4 19 34 98	35 15	+ 0 17		69 7 32 88	30 67	— 2 1
27 7 54 31 1		4 19 30 87	31 15	+ 0 28		69 7 29 48	26 45	— 3 03
28 7 50 32 4		4 19 27 74	28 02	+ 0 28		69 7 22 82	20 16	— 2 66
29 7 46 34 3		4 19 25 57	25 77	+ 0 20		69 7 13 87	11 88	— 1 99
30 7 42 37 1		4 19 24 23	24 35	+ 0 12		69 7 3 14	1 49	— 1 65
Feb 1 7 34 45 1		4 19 24 03	24 09	+ 0 06		69 6 39 38	34 57	— 4 81
4 7 23 3 3		4 19 30 03	31 10	+ 0 07		69 5 45 14	39 20	— 5 94
5 7 19 10 7		4 19 33 70	33 79	+ 0 09		69 5 22 77	16 79	— 5 98
6 7 15 19 5		4 19 38 15	38 32	+ 0 17		69 4 56 32	52 28	— 4 04
11 6 56 15 4		4 20 13 64	13 64	0 00		69 2 25 13	20 89	— 4 24
13 6 48 43 6		4 20 33 69	33 61	— 0 08		69 1 11 97	7 05	— 4 92
15 6 41 15 0		4 20 56 98	56 81	— 0 17		68 59 49 84	45 84	— 4 00
16 6 37 31 7		4 21 9 60	9 64	+ 0 04		68 59 7 11	2 55	— 4 56
17 6 33 49 5		4 21 23 30	23 30	0 00		68 58 21 79	17 50	— 4 29
18 6 30 8 1		4 21 37 90	37 73	— 0 17		68 57 36 11	30 73	— 5 38
19 6 26 27 4		4 21 53 13	52 95	— 0 18		68 56 47 29	42 18	— 5 11
May 14 1 52 3 4		5 17 54 58	54 93	+ 0 35		67 9 22 29	16 93	— 36
21 1 31 8 2		5 24 31 38	31 90	+ 0 52		67 2 22 70	20 74	— 2 01

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF SATURN

1831								
Mar 5 11 8 38 4	C	9 59 32 05			C	75 56 45 18		
6 11 4 26 1		9 59 15 68				75 55 9 76		
8 10 55 59 4		9 58 40 58				75 52 6 38		

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF SATURN (Continued)

Mean S I T I f				P i t Ob	A R f r m	A R f m	E r f N A	P i t Ob	N P D f r m	N I D	E r f N A
Ob t i				r v d	Ob t i	N A		d	Ob r v t i o	f r m N A	
1832										//	
Mar	23	10	44 45 7	C	10 49 32 35			C	80 13 5 87		
	24	10	40 34 2		10 49 16 44				80 11 31 97		
	25	10	36 23 1		10 49 1 05				80 10 1 21		
	26	10	32 12 6		10 48 46 66				80 8 29 46		
	27	10	28 0 9		10 48 30 49				80 7 2 00		
	28	10	23 50 3		10 48 1 61				80 5 34 72		
	29	10	19 39 6		10 48 1 20				80 4 9 54		
	30	10	1 29 7		10 47 46 87				80 2 46 41		
	31	10	11 19 6		10 47 32 65				80 1 25 54		
April	1	10	7 9 8		10 47 19 07				80 0 5 77		
	2	10	3 0 1		10 47 5 63				79 58 48 67		
	3	9	8 51 0		10 46 52 25				79 57 32 85		
	4	9	4 42 0		10 46 39 17				79 56 20 00		
	5	9	50 33 4		10 46 26 11						
	6	9	46 22 2		10 46 14 65				79 53 55 54		
	7	9	42 14 0		10 46 2 28				79 52 46 07		
	10	9	29 57 1		10 45 26 57				79 49 37 27		
	11	9	25 50 4		10 45 15 43				79 48 37 86		
	12	9	21 43 2		10 45 5 41				79 47 42 96		
	13	9	17 36 4		10 44 54 62				79 46 44 08		
	14	9	13 31 3		10 44 44 69				79 45 54 16		
	21	8	44 57 9		10 43 45 37				79 40 57 06		
	22	8	40 55 0		10 43 38 28				79 40 7 84		
	23	8	36 52 6		10 43 30 94				79 39 37 48		
	24	8	32 50 3		10 43 24 61				79 39 5 57		
	26	8	24 47 1		10 43 12 87				79 38 13 01		
	27	8	20 4 1		10 43 8 00				79 37 50 19		
	28	8	16 43 8		10 43 2 72				79 37 27 94		
	29	8	12 43 5		10 42 57 93				79 37 10 21		
	30	8	8 43 0		10 42 53 89				79 36 55 14		
May	3	7	56 45 2	,	10 42 44 18				79 36 19 64		
	4	7	52 46 4		10 42 40 77				79 36 14 04		
	5	7	48 48 3		10 42 38 29				79 36 8 71		
	6	7	44 51 6		10 42 37 21				79 36 8 11		
	9	7	32 58 6		10 42 32 54				79 36 14 41		
	11	7	25 7 7		10 42 32 49				79 36 35 76		
	12	7	21 11 9		10 42 33 02				79 36 49 44		
	14	7	13 22 0		10 42 35 52				79 37 20 84		
	15	7	9 29 0		10 42 37 58				79 37 42 02		
	16	7	5 34 9		10 42 39 66				79 38 1 02		
	17	7	1 40 9		10 42 41 54				79 38 28 25		
	18	6	57 48 5		10 42 44 22				79 37 56 06		
	19	6	53 55 9		10 42 47 63				79 37 55 80		
1833.	20	6	50 2 5		10 42 51 12				79 38 21 30		
	21	6	46 11 0		10 42 55 04				79 38 21 85		
	13	12	20 21 0		11 45 0 35				85 40 57 31		
	14	12	16 8 2		11 44 43 28				85 38 59 32		
	15	12	11 55 5		11 44 25 98				85 37 4 77		
	16	12	7 41 9		11 44 8 40						
	17	12	3 28 7		11 43 51 23				85 33 13 86		
	18	11	9 15 0		11 43 33 92				85 31 19 65		
	19	11	5 19		11 43 16 12				85 29 24 57		
	20	11	50 49 1		11 42 59 21				85 27 32 48		
	21	11	46 36 0		11 42 42 67				85 25 38 79		
	22	11	42 22 5		11 42 24 82				85 23 45 78		
	23	11	38 10 0		11 42 7 79				85 21 55 06		

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF SATURN (Continued)

M an S la Tm f	P Int Ob- rved	A R fr m Ob H	A R from N A	Err f N A	P Int Ob- d	N P D from Ob H	N P D f m N A	Err f N A
1833		m					/	
Mar 25 11 29 44.3	C	11 41 33 83			C	85 18 24 32		
26 11 25 31.5		11 41 16 84				85 16 25 16		
27 11 21 19.1		11 41 0-03				85 14 37 74		
28 11 17 6.4		11 40 43 43				85 12 51-21		
29 11 12 53.9		11 40 26 87				85 12 14 90		
30 11 8 41.3		11 40 10 33				85 9 19 50		
31 11 4 29.3		11 39 54 08				85 7 37 48		
Apr 1 1 11 0 17.4		11 39 37 96				85 5 54 00		
2 10 56 5.4		11 39 21 77				85 4 15 24		
3 10 51 53.9		11 39 6 05				85 2 37 44		
4 10 47 42.8		11 38 50-24				85 0 58 91		
5 10 43 30.5		11 38 34 94				84 59 22 49		
6 10 39 19.2		11 38 19 41				84 57 46 88		
8 10 30 57.7		11 37 49 27				84 54 43 59		
13 10 10 8		11 36 37 73				84 47 30 2		
14 10 5 57.3		11 36 24 07				84 46 7 10		
16 9 57 37.5		11 35 57 54				84 43 31 42		
17 9 53 29.9						84 42 15 67		
18 9 49 21.8		11 35 31 79				84 41 1 14		
19 9 45 13.9		11 35 19 44				84 39 49 22		
20 9 41 5.1		11 35 7 43				84 38 40 02		
21 9 36 57.3		11 34 56 10				84 37 34 72		
22 9 32 50.6		11 34 44-24				84 36 27 90		
23 9 28 43.4		11 34 33 12				84 35 20 56		
24 9 24 36.7		11 34 22 38				84 34 21 33		
25 9 20 30.1		11 34 11 54				84 33 22 17		
26 9 16 24.4		11 34 1 29				84 32 21 56		
27 9 12 18.5		11 33 51 44				84 31 33 05		
30 9 0 2.6		11 33 23 56				84 29 2 68		
May 2 8 51 53.8		11 33 6 41				84 27 35 79		
4 8 43 46.5		11 3 50 86				84 26 18 0		
1835								
Apr 6 12 21 5.7		13 18 28 20	28 19	- 0 01		95 17 35 71	54 90	+ 19 19
7 12 16 52.7		13 18 11 20	11 13	- 0 07		95 15 50 76	16 9 79	+ 19 03
10 12 4 13.6		13 17 19 75	19 79	+ 0 04		95 10 34-74	55 78	+ 21-04
11 12 0 0-6		13 17 2 35	2 66	+ 0 31		95 8 51 43	9 11-62	+ 20 19
13 11 51 34.9		13 16 28 56	28 44	- 0 12		95 5 26 03	44 54	+ 18 1
14 11 47 21.9		13 16 11 34	11 36	- 0 02		95 3 42 32	4 1 64	+ 19 32
15 11 43 9.3		13 15 54 27	54 30	+ 0 03		95 1 59 32	2 19-20	+ 19 88
16 11 38 56.1		13 15 37 22	37 27	+ 0 05		95 0 19 10	37 35	+ 18-25
17 11 34 43.1		13 15 20-07	20 31	+ 0 24		94 58 36 09	56 13	+ 20 04
18 11 30 30.8		13 15 3 23	3 40	+ 0 17		94 56 57 35	57 1 56	+ 18 21
19 11 26 18.5		13 14 46 57	46 56	- 0 01		94 55 16 50	35-67	+ 19 17
20 11 22 5.2		13 14 29 52	29 80	+ 0 28		94 53 36 87	56 64	+ 19 77
23 11 9 27.3		13 13 39 84	40 06	+ 0 22		94 48 4 -28	49 4 47	+ 19 19
25 11 1 3.4		13 13 7 16	7 41	+ 0 25		94 45 34 46	54 64	+ 20 18
26 10 56 51.6			51-27			94 43 59 29	44 21 34	+ 22 05
27 10 52 39.4		13 12 35 11	35 28	+ 0 17		94 42 28 79	49 14	+ 20 35
30 10 40 4.7		13 11 48 02	48 18	+ 0 16		94 37 57 71	38 19 73	+ 22 02
May 2 10 31 42.9		13 11 17 38	17 59	+ 0 21		94 35 7-02	26-65	+ 19 63
3 10 27 31.9		13 11 2 18	2 59	+ 0 41		94 33 42 24	34 2 30	+ 20 06
4 10 23 20-6		13 10 47 47	47 76	+ 0 29		94 32 20 56	39 35	+ 18 79
6 10 14 59.9		13 10 18 31	18 73	+ 0 42		94 29 37 67	58 29	+ 20 62
7 10 10 50.4		13 10 4 04	4 54	+ 0 50		94 28 20 86	39 96	+ 19 10
9 10 2 30.3		13 9 36 59	36 83	+ 0 24		94 25 48 65	26 8 45	+ 19 80
11 9 54 12.0		13 9 9-67	10 01	+ 0 34		94 23 23 71	43 42	+ 19 71

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF SATURN (*Continued*)

M an S lar Tim f Ob rv tl	P Int Ob- rv d.	A R fr m Obs tl	A R f m N A	Err f N A	P i t Ob- rved	N P D fr m Ob rv tl	N P D f m N A	Err f N A.
1835 M y 16 9 33 30.1	C	13 8 6 95	7 33	+ 0 38	C	94 17 53 19	18 12 36	+ 19 17
17 9 29 23.0		13 7 55 56	55 58	+ 0 02		94 16 53 50	17 11 65	+ 18 15
19 9 21 8.2		13 7 32 63	32 93	+ 0 32		94 14 56 65	15 16 13	+ 19 48
20 9 17 1.1		13 7 21 64	22 04	+ 0 40		94 14 2 30	21 34	+ 19 04
23 9 4 43.0		13 6 51 04	51 14	+ 0 10		94 11 31 15	49 25	+ 18 10
24 9 0 37.3		13 6 41 14	41 45	+ 0 31		94 10 44 21	11 2 71	+ 18 50
28 8 44 17.2		13 6 6 83	5 82	- 0 01		94 7 59 38	8 17 84	+ 18 46
1836 Ap l 13 12 37 21.5		14 5 21 56	21 60	+ 0 04		99 48 33 81	53 35	+ 19 54
14 12 33 8.6		14 5 4 47	4 54	+ 0 07		99 47 0 61	19 82	+ 19 21
15 12 28 55.0		14 4 47 23	47 40	+ 0 17		99 45 25 99	46 15	+ 20 16
16 12 24 42.4		14 4 30 29	30 20	- 0 09		99 43 51 99	44 12 42	+ 20 43
17 12 20 29.0		14 4 12 89	12 95	+ 0 06		99 42 18 50	38 74	+ 20 24
19 12 12 3.0		14 3 38 20	38 33	+ 0 13		99 39 10 92	31 65	+ 20 73
20 12 7 49.7		14 3 20 97	21 00	+ 0 03		99 37 38 60	58 26	+ 19 66
22 11 59 23.4		14 2 46 34	46 27	- 0 07		99 35 31 20	34 52 13	+ 20 93
23 11 55 9.8		14 2 28 86	28 90	+ 0 04		99 33 0 25	19 52	+ 19 27
24 11 50 7.2		14 2 11 59	11 55	- 0 04		99 31 26 41	47 29	+ 20 88
26 11 42 32.7		14 1 36 90	36 92	+ 0 02		99 28 24 24	44 04	+ 19 80
28 11 34 4.4		14 1 2 32	2 43	+ 0 11		99 25 22 13	42 53	+ 20 40
29 11 29 50.6		14 0 45 15	45 27	+ 0 12		99 23 50 68	24 12 55	+ 21 87
May 1 11 21 25.3		14 0 10 91	11 13	+ 0 22		99 20 53 79	21 14 52	+ 20 73
4 11 8 47.2		13 59 20 85	20 58	- 0 27		99 16 31 85	53 40	+ 21 55
7 11 4 35.2		13 59 4 03	3 94	- 0 09		99 15 6 13	28 03	+ 21 90
7 10 56 10.3		13 58 31 13	30 98	- 0 15		99 12 19 62	39 87	+ 20 25
8 10 51 58.4		13 8 14 95	14 69	- 0 26		99 10 57 47	11 17 22	+ 19 75
9 10 47 44.9		13 57 58 60	8 54	- 0 06		99 9 35 35	55 41	+ 20 06
11 10 39 22.5		13 57 26 68	26 70	+ 0 02		99 6 56 58	15 16	+ 18 58
15 10 22 38.2		13 56 25 19	24 97	- 0 22		99 1 47 62	2 8 94	+ 21 32
18 10 10 5.2		13 55 40 63	40 73	+ 0 10		98 58 13 44	33 11	+ 19 67
19 10 5 55.1		13 55 26 35	26 41	+ 0 06		98 57 4 62	23 99	+ 19 37
23 9 49 17.0		13 54 31 37	31 43	+ 0 06		98 52 43 15	2 34	+ 19 19
28 9 28 34.1		13 53 28 28	28 28	0 00		98 37 50 45	11 47	+ 21 02
June 10 8 35 17.1		13 51 17 72	17 86	+ 0 14		98 38 43 02	4 18	+ 21 16
11 8 31 13.9		13 51 10 34	10 05	- 0 29		98 38 13 48	35 64	+ 22 16
12 8 27 9.8		13 51 2 68	2 57	- 0 11		98 37 47 76	9 08	+ 21 32
13 8 23 6.8		13 50 55 73	55 43	- 0 30		98 37 25 33	44 51	+ 19 18
14 8 19 4.4		13 50 48 89	48 65	- 0 24		98 37 0 72	22 02	+ 21 30
17 8 6 58.7		13 50 30 38	30 35	- 0 03		98 36 7 11	27 15	+ 20 04
20 7 52 41.2		13 50 15 29	15 22	- 0 07		98 35 30 90	51 05	+ 20 15
28 7 23 3.8		13 49 51 06	50 80	- 0 26		98 35 27 23	47 38	+ 20 15
30 7 15 9.5		13 49 48 69	48 35	- 0 34		98 35 46 83	7 66	+ 20 83
July 2 7 7 16.5		13 49 47 61	47 38	- 0 23				
4 6 59 25.3		13 49 48 16	47 86	- 0 30				
1837 Mar 2 16 19 23.2		15 1 27 46	27 26	- 0 20		104 35 46 31	6 65	+ 20 34
8 15 55 26.9		15 1 6 60	6 17	- 0 43		104 33 1 55	19 87	+ 18 32
May 1 12 11 35.7		14 49 32 0	31 85	- 0 65		103 36 18 42	36 71	+ 18 29
2 12 7 22.1		14 49 14 53	14 13	- 0 40		103 34 59 01	18 04	+ 19 03
3 12 3 8.3		14 47 56 67	56 39	- 0 28		103 33 39 96	59 68	+ 19 72
4 11 58 54.6		14 48 39 01	38 63	- 0 38		103 32 20 66	41 20	+ 20 54
11 11 29 19.9		14 46 35 43	34 91	- 0 52		103 23 21 76	42 02	+ 20 26
12 11 25 6.6		14 46 17 91	17 39	- 0 52		103 22 7 24	26 73	+ 19 49
14 11 16 40.0		14 45 43 12	42 61	- 0 51				
15 11 12 27.7		14 45 25 98	25 36	- 0 62				

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF SATURN (*Continued*)

M S 1 T m f	P 1 t Ob	A R f r m	A R f r m	Err f N A	P 1 t Ob	N P D f m	N P D	Err f N A
Ob t l	rved	Ob r v t l	N A		d	Obs r v t l	f m N A	
1837								
My 30 10 9 26 3	C	14 41 23 17	22 83	— 0 34	C	103 1 41 95	0 67	+ 18 72
July 11 7 18 13 1		14 35 17 05	16 71	— 0 34		102 42 45 29	3 18	+ 17 89
Ag 8 5 29 53 4		14 37 3 82	3 12	— 0 70		102 58 55 49	15 57	+ 20 08
1838								
My 10 12 24 23 7		15 36 55 10	54 59	— 0 51		107 0 36 98	53 57	+ 16 59
11 12 20 9 5		15 36 37 23	36 58	— 0 65		106 59 35 68	52 78	+ 17 10
12 12 15 56 0		15 36 19 13	18 49	— 0 64		106 58 33 39	52 02	+ 18 63
14 12 7 27 8		15 35 42 55	42 28	— 0 27		106 56 33 51	50 44	+ 16 93
17 11 54 46 1		15 34 48 41	47 73	— 0 68		106 53 32 75	48 86	+ 16 11
18 11 50 31 8		15 34 30 17	29 56	— 0 61		106 53 32 35	48 59	+ 16 24
20 11 42 4 1		15 33 53 93	53 25	— 0 68		106 50 33 03	48 77	+ 16 74
22 11 33 36 1		15 33 17 69	17 07	— 0 62		106 48 33 67	50 10	+ 16 43
23 11 29 22 1		15 32 59 49	59 05	— 0 44		106 47 30 01	51 23	+ 16 22
1839								
My 3 13 45 31 6		16 29 43 11	42 24	— 0 87		109 50 31 82	48 30	+ 16 53
June 23 10 10 4 9		16 14 45 40	44 36	— 1 04		109 18 16 02	31 68	+ 16 66
1840								
July 31 8 20 5 2		16 57 17 95	17 09	— 0 86		111 14 51 75	7 32	+ 15 7
1841								
Sept 14 6 12 8 8		17 45 27 90	27 22	— 0 68		112 33 17 39	32 02	+ 14 63
17 6 0 41 5		17 46 47 58	46 85	— 0 73		112 33 55 07	7 56	+ 12 49
20 5 49 17 5		17 46 10 94	10 20	— 0 74		112 34 27 97	43 83	+ 1 86
24 5 34 10 2		17 46 47 58	47 00	— 0 58		112 35 20 54	33 21	+ 7 67
25 5 30 24 6		17 46 57 85	57 20	— 0 65		112 35 30 64	45 07	+ 10 03
Oct 4 4 56 50 4		17 48 47 07	46 47	— 0 60				
6 4 49 32 0		17 49 15 37	14 91	— 0 46				
7 4 45 45 8		17 49 30 32	29 66	— 0 66				
1842								
April 6 18 1 51 1		19 1 22 55	21 77	— 0 78		112 6 18 04	33 52	+ 1 48
11 17 42 41 6		19 1 52 74	51 93	— 0 81		112 5 39 31	53 93	+ 14 62
July 9 11 37 11 0		18 46 15 32	14 09	— 1 23		112 30 9 48	24 69	+ 15 21
13 11 20 11 5		18 45 0 50	59 42	— 1 08		112 31 54 24	8 95	+ 14 71
19 10 54 48 9		18 43 11 63	10 52	— 1 11		112 34 26 82	39 70	+ 12 88
20 10 50 34 1		18 42 53 71	52 85	— 0 86		112 34 49 12	4 06	+ 14 94
22 10 42 7 6		18 42 19 07	18 01	— 1 06		112 35 38 90	52 00	+ 13 10
Sept 2 7 48 58 9		18 34 17 07	16 23	— 0 84		112 47 52 53	4 59	+ 12 06
11 7 13 16 5		18 33 57 38	56 84	— 0 54		112 49 13 56	25 58	+ 12 02
16 6 53 40 7		18 34 1 55	0 83	— 0 72		112 49 47 23	58 07	+ 10 84
23 6 26 32 4		18 34 24 98	24 15	— 0 83				
1843								
July 22 11 35 39 3		19 35 2 31	1 89	— 0 42		114 40 52 68	3 39	+ 10 71
Aug 23 9 21 21 2		19 26 31 51	31 06	— 0 45		112 2 1 37	13 50	+ 12 13
Sept 13 7 55 52 1		19 23 36 27	35 63	— 0 64		112 9 38 04	48 23	+ 10 19
14 51 51 6		19 23 32 06	31 48	— 0 58		112 9 50 10	0 90	+ 10 80
18 7 35 56 0		19 23 19 78	19 00	— 0 78		112 10 32 48	43 65	+ 11 17
30 6 48 47 9		19 23 22 37	21 78	— 0 59		112 11 20 34	29 81	+ 9 47
Oct. 2 6 41 18		19 23 28 61	28 17	— 0 44		112 11 13 10	25 43	+ 12 33
3 6 37 9 8		19 23 32 33	31 99	— 0 84		112 11 9 80	22 00	+ 12 20
4 6 33 18 3		19 23 36 68	36 24	— 0 44		112 11 6 62	17 66	+ 11 04

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF SATURN (*Continued*)

M S l T m f	P int Ob	A R f m	A R f m	E f N A	P int Ob	N P D f m	N P D	Ext f N A
Ob rv tl	rved	Ob tl	N A		rved	Ob rv tl n.	f m N A.	
1844		m						
J ly 23 12 20 21 1	C	20 26 47 09	46 23	—0 86	C	109 45 23 67	36 48	+ 12 81
27 12 3 24 9		20 25 34 22	33 33	—0 89		109 49 58 07	9 21	+ 11 14
A g 5 11 25 19 2		20 22 51 24	50 29	—0 95		109 59 54 67	7 92	+ 13 25
14 10 47 20 3		20 20 14 91	13 97	—0 94		110 9 14 43	28 61	+ 14 18
16 10 38 55 5		20 19 41 86	40 78	—1 08		110 11 12 79	25 83	+ 13 04
19 10 26 18 3		20 18 53 47	52 47	—1 00		110 14 5 22	15 70	+ 10 48
20 10 22 7 5		20 18 37 73	36 77	—0 96		110 14 57 97	10 65	+ 12 68
23 10 9 34 7		20 17 51 96	51 01	—0 95		110 17 37 92	60 11	+ 12 19
26 9 57 4 1		20 17 7 95	7 39	—0 56		110 20 9 48	21 21	+ 11 73
30 9 40 25 3		20 16 13 90	12 88	—1 02		110 23 17 62	28 75	+ 11 13
Sept 10 8 55 7 0		20 14 8 65	7 75	—0 90		110 30 24 98	35 99	+ 11 01
11 8 51 0 1		20 13 59 27	58 36	—0 91		110 30 55 08	7 80	+ 12 72
12 8 46 53 7		20 13 50 32	49 35	—0 97		110 31 26 80	38 44	+ 11 64
17 8 26 36 2		20 13 10 49	9 73	—0 76		110 33 42 66	53 10	+ 10 44
18 8 22 33 8		20 13 3 71	2 94	—0 77		110 34 5 09	16 17	+ 11 08
21 8 10 27 8		20 12 45 67	44 89	—0 78		110 35 5 38	18 00	+ 12 62
22 8 6 27 6		20 12 40 62	39 63	—0 99		110 35 23 17	36 01	+ 12 84
24 7 58 25 8		20 12 31 46	30 36	—1 10		110 35 56 39	8 31	+ 11 92
25 7 4 25 4		20 12 27 10	26 29	—0 81		110 36 10 19	22 45	+ 12 26
26 7 50 26 1		20 12 23 53	22 67	—0 86		110 36 22 94	35 37	+ 12 43
27 7 46 26 8		20 12 20 19	19 41	—0 78		110 36 34 95	46 90	+ 11 95
28 7 42 28 0		20 12 17 29	16 57	—0 72		110 36 44 22	57 15	+ 12 93
29 7 38 30 0		20 12 14 76	14 14	—0 62		110 36 54 78	6 09	+ 11 31
30 7 34 31 7		20 12 12 70	12 12	—0 58		110 37 3 78	13 74	+ 9 96
Oct 1 7 30 33 8		20 12 11 42	10 50	—0 92		110 37 10 90	20 12	+ 9 22
2 7 26 37 1		20 12 10 36	9 29	—1 07		110 37 13 00	25 18	+ 12 18
3 7 22 40 0		20 12 9 25	8 49	—0 76		110 37 17 70	28 86	+ 11 16
6 7 10 52 1		20 12 9 24	8 61	—0 63		110 37 19 96	32 03	+ 12 08
8 7 3 2 9		20 12 11 51	10 74	—0 77		110 37 14 81	27 54	+ 12 73
10 6 55 14 6		20 12 15 21	14 57	—0 64		110 37 7 11	17 69	+ 10 58
12 6 47 27 0		20 12 20 72	20 14	—0 58		110 36 50 84	2 48	+ 11 64
14 6 39 43 5		20 12 27 87	27 28	—0 59		110 36 30 49	41 97	+ 11 48
15 6 35 51 9		20 12 32 26	31 48	—0 78		110 36 17 68	29 74	+ 12 06
18 6 24 19 3		20 12 47 21	46 62	—0 59		110 35 32 95	45 02	+ 12 07
19 6 20 29 1		20 12 53 04	52 50	—0 54		110 35 16 65	27 55	+ 10 90
21 6 12 50 5		20 13 6 31	5 47	—0 84		110 34 38 53	48 67	+ 10 04
22 6 9 1 6		20 13 13 41	12 64	—0 77		110 34 14 55	27 07	+ 12 52
23 6 5 12 9		20 13 21 05	20 08	—0 97		110 33 50 96	4 40	+ 13 44
24 6 1 24 9		20 13 28 74	27 99	—0 75		110 33 30 15	40 31	+ 10 16
2 5 57 37 5		20 13 37 10	36 31	—0 79		110 33 3 35	16 28	+ 12 93
26 5 53 50 0		20 13 45 76	45 03	—0 73		110 32 38 37	48 30	+ 9 93
27 5 50 3 4		20 13 54 86	54 13	—0 73		110 32 8 82	20 43	+ 11 61
1845								
A g 1 12 34 39 9		21 15 39 36	37 74	—1 62		107 3 26 51	37 22	+ 10 71
8 12 5 5 0		21 13 35 27	33 86	—1 41		107 13 21 70	32 53	+ 10 83
12 11 48 11 1		21 12 24 38	22 81	—1 57		107 18 58 69	8 26	+ 9 57
16 11 31 16 2		21 11 13 31	12 30	—1 01		107 24 26 90	37 43	+ 10 53
21 11 10 10 8		21 9 47 11	46 81	—1 30		107 31 4 42	16 31	+ 11 89
23 11 1 45 0		21 9 12 93	11 92	—1 01		107 33 40 16	51 08	+ 10 92
26 10 49 7 7		21 8 23 49	22 10	—1 39		107 37 25 96	37 03	+ 11 07
27 10 44 55 5		21 8 7 21	5 82	—1 39		107 38 40 05	50 50	+ 10 45
28 10 40 43 0		21 7 50 87	49 64	—1 23		107 39 55 04	3 12	+ 8 08
29 10 36 31 5		21 7 34 95	33 68	—1 27		107 41 4 83	14 64	+ 9 81
30 10 32 19 7		21 7 19 17	17 89	—1 28		107 42 15 76	25 23	+ 9 47
31 10 28 6 9		21 7 3 58	2 29	—1 29		107 43 25 77	34 77	+ 9 00

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF SATURN (*C nt nu d*)

M an Solar Tim f	P int Ob	A R from	A R f m	Err f N A	P l Ob	N P D f m	N P D	Err f N A
Ob ti n.	rv d.	Ob rv ti	N A		rved	Ob rvati	f m N A	
1845		m						
S pt 2 10 19 45 6	C	21 6 32 86	31 69	— 1 17	C	107 45 42 28	50 51	+ 8 23
11 9 42 17 1		21 4 27 02	25 59	— 1 43		107 54 52 69	1 38	+ 8 69
12 9 38 7 7		21 4 14 02	12 91	— 1 11		107 55 47 69	54 98	+ 7 29
13 9 33 59 3		21 4 1 49	0 51	— 0 98		107 56 39 91	49 30	+ 9 39
14 9 29 51 8		21 3 49 52	48 39	— 1 13		107 57 33 12	41 18	+ 8 06
17 9 17 29 3		21 3 15 10	13 87	— 1 23		107 59 58 18	8 12	+ 9 94
19 9 9 16 2		21 2 53 36	52 40	— 0 96		108 1 29 24	38 67	+ 9 43
20 9 5 10 0		21 2 43 55	42 16	— 1 39		108 2 9 62	21 69	+ 12 07
22 8 56 59 3		21 2 24 02	22 67	— 1 35		108 3 32 68	43 11	+ 10 43
24 8 48 49 4		21 2 6 01	4 54	— 1 47		108 4 47 96	58 33	+ 10 37
25 8 44 44 7		21 1 57 14	56 00	— 1 14		108 5 24 33	33 59	+ 9 26
27 8 36 36 8		21 1 41 42	39 97	— 1 45		108 6 31 36	39 15	+ 7 79
28 8 32 33 9		21 1 33 43	32 62	— 0 91		108 6 57 96	9 43	+ 11 47
29 8 28 30 5		21 1 26 64	25 43	— 1 21		108 7 28 45	39 03	+ 10 58
30 8 24 28 0		21 1 19 82	18 71	— 1 11		108 7 55 67	5 08	+ 9 41
Oct 1 8 20 25 0		21 1 13 59	12 38	— 1 21		108 8 22 99	30 35	+ 7 36
2 8 16 23 0		21 1 7 44	6 40	— 1 04		108 8 44 83	53 88	+ 9 05
3 8 12 20 7		21 1 1 19 2	0 82	— 1 10		108 9 6 5	15 81	+ 9 26
5 8 4 19 8		21 0 51 84	50 84	— 1 00		108 9 46 73	54 41	+ 7 68
8 7 52 20 1		21 0 39 79	38 79	— 1 00		108 10 32 01	39 60	+ 7 59
9 7 48 20 6		21 0 36 36	35 57	— 0 79		108 10 42 11	51 19	+ 9 08
15 7 24 35 2		21 0 25 69	24 69	— 1 00		108 11 14 77	24 65	+ 9 88
17 7 16 42 2		21 0 25 39	24 29	— 1 10		108 11 14 04	21 95	+ 7 91
20 7 4 56 5		21 0 27 82	26 73	— 1 09		108 10 54 98	5 31	+ 10 33
21 7 1 2 7		21 0 29 51	28 36	— 1 15		108 10 45 80	55 81	+ 10 01
23 6 53 15 2		21 0 33 87	32 86	— 1 01		108 10 21 81	32 23	+ 10 42
24 6 49 23 2		21 0 36 87	35 74	— 1 13		108 10 6 61	17 78	+ 11 17
25 6 45 30 4		21 0 40 13	38 99	— 1 14		108 9 51 92	1 61	+ 9 69
26 6 41 38 4		21 0 43 81	42 68	— 1 13		108 9 34 87	43 75	+ 8 88
27 6 37 45 5		21 0 48 00	46 77	— 1 23		108 9 14 89	24 12	+ 9 23
28 6 33 53 9		21 0 52 44	51 26	— 1 18		108 8 52 38	2 68	+ 10 30
31 6 22 20 7		21 1 8 27	7 20	— 1 07		108 7 39 26	48 23	+ 8 97
Nov 1 6 18 32 9		21 1 14 40	13 32	— 1 08		108 7 10 52	20 95	+ 10 43
2 6 14 43 5		21 1 21 01	19 85	— 1 16		108 6 40 71	51 00	+ 10 29
3 6 10 53 2		21 1 27 64	26 77	— 0 87		108 6 9 78	18 29	+ 8 51
4 6 7 5 9		21 1 35 02	34 13	— 0 89		108 5 35 09	44 91	+ 9 82
5 6 3 17 8		21 1 43 10	42 15	— 0 95		108 5 1 06	9 86	+ 8 80
6 5 59 30 0		21 1 51 04	49 98	— 1 06		108 4 21 21	31 50	+ 10 29
8 5 51 55 5		21 2 8 69	7 40	— 1 29		108 3 3 80	14 51	+ 10 71
1846								
Aug 26 11 41 23 5		21 59 10 96	9 26	— 1 70		104 1 21 75	34 46	+ 12 71
28 11 32 17 4		21 58 36 33	34 84	— 1 49		104 4 34 26	44 29	+ 10 03
Sept 4 11 2 47 9		21 56 38 40	36 87	— 1 53		104 15 14 84	26 17	+ 11 33
9 10 41 47 5		21 55 17 63	16 15	— 1 48		104 22 27 34	37 31	+ 9 97
10 10 37 35 7		21 55 2 00	0 48	— 1 52		104 23 50 57	60 33	+ 9 76
11 10 33 25 3		21 54 46 61	44 98	— 1 63		104 25 11 55	22 12	+ 10 57
15 10 16 41 2		21 53 46 34	44 84	— 1 50		104 30 26 55	36 90	+ 10 35
18 10 4 11 1		21 53 3 43	1 91	— 1 52		104 34 7 73	18 70	+ 10 97
22 9 47 33 8		21 52 9 51	8 07	— 1 44		104 38 42 67	53 43	+ 10 76
24 9 39 16 4		21 51 44 25	42 71	— 1 54		104 40 49 89	1 26	+ 11 37
25 9 35 8 2		21 51 31 85	30 44	— 1 41		104 41 51 97	2 67	+ 10 70
26 9 31 0 3		21 51 20 15	18 47	— 1 68		104 42 52 30	2 43	+ 10 13
28 9 22 45 5		21 50 56 87	55 44	— 1 43		104 44 47 01	56 77	+ 9 76
29 9 18 38 8		21 50 45 87	44 36	— 1 51		104 45 40 67	51 32	+ 10 75
Oct 1 9 10 36 3		21 50 24 61	23 13	— 1 48		104 47 24 21	35 06	+ 10 85

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF SATURN (*Continued*)

M	S	Time	Alt	Obs	A R f m	A R f m	Err	f N A	Obs	N P D f m	N P D	Err	f N A
Ob	ti			d	Ob	rv	ti	N A	d	Ob	rv	ti	N A
1846		m				m							
Oct	5	8 54	33	C	21 49 45 96	44 54	—1 42		C	104 50 30 36	40 34	+	9 98
	6	8 49	58 5		21 49 37 19	35 7	—1 44			104 51 13 61	22 04	+	8 43
	7	8 45	54 3		21 49 28 76	27 27	—1 49			104 51 52 24	1 76	+	9 52
	8	8 41	50 3		21 49 20 85	19 15	—1 70			104 52 30 21	39 57	+	9 36
	13	8 21	35 7		21 48 45 23	43 88	—1 35			104 55 10 87	19 20	+	8 33
	14	8 17	33 6		21 48 39 29	37 90	—1 39			104 55 35 59	45 09	+	9 50
	15	8 13	32 2		21 48 33 81	32 38	—1 43			104 56 0 70	8 71	+	8 01
	23	7 41	34 1		21 48 2 94	1 43	—1 51			104 57 56 77	5 90	+	9 13
	24	7 37	36 3		21 48 0 79	59 34	—1 45			104 58 1 85	11 08	+	9 23
	26	7 29	41 6		21 47 57 75	56 35	—1 40			104 58 5 6	15 21	+	9 56
	29	7 17	52 0		21 47 6 25	4 8	—1 40			104 57 55 96	5 60	+	9 64
	30	7 13	56 5		21 47 56 51	55 16	—1 35			104 57 50 68	58 25	+	7 57
	31	7 10	1 1		21 47 57 26	5 8	—1 41			104 7 40 83	48 81	+	7 98
N v	2	7 2	12 5		21 47 9 76	58 47	—1 29			104 57 14 76	23 69	+	8 93
	4	6 54	25 0		21 48 4 07	2 66	—1 41			104 56 41 84	50 21	+	8 37
	6	6 46	39 1		21 48 9 93	8 49	—1 44			104 6 0 41	8 34	+	7 93
	7	6 42	46 6		21 48 13 38	11 98	—1 40			104 55 36 14	44 37	+	8 23
	9	6 35	30		21 48 21 66	20 20	—1 46			104 54 40 68	50 11	+	9 43
	10	6 31	12 0		21 48 26 29	24 88	—1 41			104 54 12 17	19 89	+	7 72
1847													
S pt	17	10 59	9 6		22 43 16 46	14 6	—1 81			100 19 24 51	33 83	+	9 32
	18	10 54	57 4		22 43 0 13	58 49	—1 64			100 21 1 39	10 34	+	8 9
	20	10 46	34 0		22 42 28 41	26 68	—1 73			100 24 9 99	19 43	+	9 41
Oct	7	9 35	44 4		22 38 28 63	26 76	—1 87			100 47 8 28	15 87	+	7 9
	8	9 31	36 7		22 38 16 8	14 79	—2 06			100 48 12 65	21 63	+	8 98
	11	9 19	14 9		22 37 42 4	40 61	—1 93			100 51 20 02	27 2	+	7 27
	15	9 2	49 9		22 37 1 17	59 3	—1 82			100 54 59 32	6 66	+	7 34
	16	8 58	44 6		22 36 51 74	49 8	—1 89			100 55 48 82	56 30	+	7 48
	19	8 46	30 1		22 36 24 93	23 29	—1 64			100 58 4 12	12 24	+	8 12
	20	8 42	26 0		22 36 16 63	15 11	—1 52			100 58 43 29	53 22	+	9 93
	26	8 18	9 3		22 35 35 18	33 45	—1 73			101 2 4 86	12 42	+	7 6
Nov	4	7 42	8 4		22 34 57 49	55 82	—1 67			101 4 30 39	36 77	+	6 38
	5	7 38	10 4		22 34 55 32	53 56	—1 76			101 4 33 03	41 03	+	8 10
	6	7 34	12 6		22 34 53 49	51 66	—1 83			101 4 35 15	42 91	+	7 76
	8	7 26	18 1		22 34 50 88	49 10	—1 78			101 4 30 47	39 56	+	9 09
	9	7 22	21		22 34 50 08	48 39	—1 69			101 4 28 43	34 37	+	5 94
	10	7 18	25 5		22 34 49 86	48 11	—1 75			101 4 19 65	26 70	+	7 05
	15	6 58	50 4		22 34 54 44	52 59	—1 85			101 3 5 13	13 01	+	7 88
	16	6 54	56 3		22 34 56 40	54 68	—1 72			101 2 43 69	51 13	+	7 44
	19	6 43	17 2		22 35 4 97	3 33	—1 64			101 1 21 98	31 53	+	9 5
	20	6 39	25 1		22 35 8 71	7 01	—1 70			101 0 52 3	0 29	+	7 76

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF GEORGIAN

1831													
Aug	10	11 46	6 9	C	21 0 2 43				C	107 55 30 69			
	23	10 53	59 6		20 58 1 56					107 59 38 01			
	30	10 24	27 4		20 57 0 49								
Sept	1	10 16	18 7		20 56 43 60					108 0 48 58			
	2	10 12	14 5		20 56 35 29					108 1 20 81			
	4	10 4	6 8		20 56 19 24					108 2 25 25			
	7	9 51	55 4		20 55 55 68					108 3 57 61			
	11	9 35	42 8		20 55 26 38					108 5 55 49			

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF GEORGIAN (Continued)

M S T m f	P IntOb-	A R from	A R f m	Er f N A	P i t O i	N P D f m	N i D	E f N A
Ob t l n	rv d	Obs t l	N A.		rv d	Obs rv t b	f m N A	
1831							//	
S pt 15 9 19 24 4	C	20 54 51 81			C	108 8 30 66		
Oct 2 8 11 13 5		20 53 31 56				108 13 9 89		
3 8 7 14 2		20 53 27 67				108 13 23 18		
6 7 55 16 4		20 53 17 63				108 14 0 89		
7 7 51 18 1		20 53 15 18				108 14 18 50		
8 7 47 19 2		20 53 12 30						
14 7 23 31 8		20 53 0 24						
16 7 15 40 9		20 53 1 00				108 15 0 86		
21 6 55 55 9		20 52 55 47						
22 6 52 0 2		20 52 55 80				108 14 58 96		
23 6 48 5 1		20 52 56 61				108 14 56 38		
25 6 40 14 2		20 52 57 57				108 14 46 79		
1832								
A g 28 10 46 17 5		21 13 59 93						
Sept 11 9 49 21 2		21 12 5 52				106 56 35 05		
15 9 33 9 2		21 11 36 96				106 58 35 27		
19 9 16 58 9		21 11 10 92				107 0 30 44		
22 9 4 52 9		21 10 52 09				107 1 49 43		
24 8 56 49 5		21 10 40 55				107 2 37 12		
25 8 52 47 6		21 10 35 00				107 3 58 84		
27 8 44 45 1		21 10 24 67				107 4 42 97		
30 8 32 45 1		21 10 9 64				107 5 41 68		
Oct 7 8 4 43 1		21 9 42 03				107 6 31 43		
12 7 44 49 4		21 9 27 56				107 7 27 56		
14 7 36 53 4		21 9 23 13				107 7 44 56		
23 7 1 20 0		21 9 12 68				107 8 11 40		
26 6 49 38 2		21 9 12 84				107 8 2 81		
27 6 45 47 0		21 9 13 50				107 7 59 45		
28 6 41 41 8		21 9 14 50				107 7 3 53		
29 6 37 46 6		21 9 14 89				107 7 46 04		
Nov 3 6 18 14 7		21 9 22 34				107 7 8 15		
5 6 10 27 1		21 9 26 78				107 6 41 98		
9 5 54 54 8		21 9 28 34				107 5 45 54		
10 5 51 2 0		21 9 41 18				107 5 28 52		
1833								
Aug 29 10 59 44 0		21 30 27 07				105 33 18 40		
Sept 10 10 11 12 0		21 29 6 47				105 39 19 19		
11 10 7 15 7		21 29 6 64				105 39 18 15		
13 9 58 39 4		21 28 22 06				105 43 4 56		
15 9 50 33 1		21 28 7 17				105 44 15 11		
17 9 42 26 7		21 27 52 50				105 45 22 28		
18 9 38 23 9		21 27 45 60				105 45 53 94		
20 9 30 18 1		21 27 31 45				105 46 56 33		
21 9 26 16 4		21 27 24 73				105 47 26 87		
30 8 50 2 2		21 26 31 11				105 51 27 09		
Oct 2 8 41 57 3		21 26 21 24				105 52 11 77		
4 8 33 55 9		21 26 11 53				105 52 54 58		
6 8 25 54 0		21 26 2 71				105 53 31 95		
7 8 21 55 4		21 25 58 05				105 53 50 75		
14 7 53 58 9		21 25 33 95				105 55 32 83		
15 7 50 0 1		21 25 31 09				105 55 42 86		
16 7 46 2 4		21 25 29 00				105 55 52 95		
17 7 42 3 6		21 25 26 57				105 56 4 40		

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF GEORGIAN (Continued)

M n S I T f	l i Ob	A R f m	A. R f m	E r r f N A	P i Ob	N P D from	N P D	E f N A
Ob i	d	Ob i	N A		r v d	Ob r v d n.	f r m N A	
1833								
O t 22 7 22 69	C	21 25 17 70			C	105 56 33 83		
25 7 10 23 5		21 25 14 55				105 56 42 10		
1835								
S pt 15 10 21 40)		22 0 26 30	29 36	+ 3 06		103 2 25 73	20 15	— 5 58
18 10 12 29 6		22 0 2 41	5 40	+ 2 99		103 4 31 40	25 53	— 5 57
20 10 4 22 9		21 59 46 89	49 93	+ 3 04		103 8 51 90	46 57	— 5 33
1836								
S pt 16 10 33 18 2		22 16 0 62	4 22	+ 3 60		101 37 30 57	21 99	— 8 58
8 10 4 51 0		22 16 5 11	8 74	+ 3 63		101 42 35 24	26 30	— 8 94
Oct								
1 J 32 20 9		22 14 7 93	11 51	+ 3 58		101 47 43 76	36 20	— 7 56
3 9 24 22 0		22 13 54 96	58 32	+ 3 36		101 48 53 72	46 33	— 7 39
6 9 12 15 0		22 13 35 99	39 76	+ 3 77		101 50 33 44	25 74	— 7 70
7 9 8 14 2		22 13 30 22	33 81	+ 3 59		101 51 2 99	57 21	— 5 78
8 J 4 11 3		22 13 24 49	28 01	+ 3 52		101 51 34 22	27 80	— 6 42
10 8 6 9 4		22 13 13 40	16 85	+ 3 45		101 52 35 61	26 48	— 9 13
11 8 2 7 9		22 13 7 90	11 49	+ 3 59		101 53 3 66	54 56	— 9 10
12 8 48 6 4		22 13 2 60	6 30	+ 3 70		101 53 29 69	21 76	— 7 93
13 8 44 6 2		22 12 57 72	1 26	+ 3 54		101 53 55 94	47 93	— 8 01
14 8 40 5 3		22 12 52 90	56 39	+ 3 49		101 54 21 43	13 13	— 8 30
15 8 36 4 8		22 12 48 43	51 67	+ 3 24		101 54 45 15	37 45	— 7 70
1837								
A g 28 12 7 20 8		22 34 28 67	32 89	+ 4 22		99 51 39 65	27 23	— 12 42
20 12 3 18 0		22 34 19 78	23 91	+ 4 13		99 52 33 86	20 30	— 13 56
Sept								
13 11 2 5 5		22 32 6 16	10 41	+ 4 25		100 5 33 23	21 17	— 12 06
14 10 58 1 0		22 31 57 58	1 79	+ 4 21		100 6 23 27	10 96	— 12 31
21 10 29 31 7		22 30 59 38	3 25	+ 3 87		100 12 0 52	47 86	— 12 66
22 10 2 27 9		22 30 51 50	55 16	+ 3 66		100 12 45 45	34 04	— 11 41
23 10 1 24 0		22 30 43 32	47 18	+ 3 86		100 13 31 55	19 70	— 11 85
24 10 17 20 3		22 30 35 38	39 27	+ 3 89		100 14 16 25	4 75	— 11 50
27 10 5 9 0		22 30 12 10	16 12	+ 4 02		100 16 29 15	16 32	— 12 83
1838								
Sept 4 11 55 14 3		22 48 57 89	2 29	+ 4 40		98 25 9 04	53 69	— 15 35
29 10 13 24 1		22 45 24 72	29 07	+ 4 35		98 46 23 10	9 15	— 13 95
O t								
7 9 40 58 3		22 44 25 97	30 45	+ 4 48		98 52 4 98	51 46	— 13 52
8 9 36 53 2		22 44 19 31	23 63	+ 4 32		98 52 45 43	31 09	— 14 34
10 9 28 50 3		22 44 5 85	10 35	+ 4 50		98 53 59 88	47 89	— 11 99
11 9 24 47 9		22 43 59 49	3 90	+ 4 41		98 54 41 70	25 06	— 16 64
12 9 20 4 6		22 43 53 20	57 56	+ 4 36		98 55 16 42	1 40	— 15 02
1839								
S pt 13 11 34 49 0		23 3 1 92	6 76	+ 4 84				
1843								
Oct 15 10 24 52 6		23 59 11 71	18 29	+ 6 58		90 55 52 72	17 26	— 35 46
17 10 16 50 5		23 58 55 34	2 47	+ 7 13		90 57 36 67	3 46	— 33 21
18 10 12 42 9		23 58 48 08	54 68	+ 6 60		90 58 23 40	52 35	— 31 05
19 10 8 38 8		23 58 39 85	46 98	+ 7 13		90 59 10 42	40 60	— 29 82
22 9 56 27 8		23 58 17 39	24 44	+ 7 05		91 1 32 69	58 13	— 34 56
23 J 52 18 7		23 58 10 09	17 12	+ 7 03		91 2 19 38	44 15	— 35 23
1844								
Sept 17 12 31 0 4		0 18 15 40	23 04	+ 7 64		88 50 58 51	18 43	— 40 08
21 12 14 41 8		0 17 40 57	48 09	+ 7 52		88 54 43 01	5 50	— 37 51
22 12 10 37 1		0 17 31 74	39 28	+ 7 54		88 55 39 72	2 60	— 37 12
23 12 6 32 5		0 17 22 68	30 47	+ 7 79		88 56 38 61	59 74	— 38 87
24 12 2 27 9		0 17 14 09	21 64	+ 7 55		88 57 34 24	56 90	— 37 34
25 11 58 22 8		0 17 4 91	12 80	+ 7 89		88 58 33 24	54 14	— 39 10
8 11 46 8 7		0 16 38 34	46 25	+ 7 89		89 1 25 32	45 61	— 39 71

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF GEORGIAN (Continued)

M an S l	Tim f	l i t Ob	A R f r m	A R f r m	E f N A	P i t Ob	N P D from	N P D	E f N A
Ob	ti	rv d.	Ob	ti	N A.	d	Ob rv ti	f m N A	
1844									
S pt	29 11 42 43	C	0 16 29 57	37 40	+ 7 83	C	89 2 24 00	42 64	- 41 36
	30 11 37 59 4		0 16 20 68	28 57	+ 7 89		89 3 20 1	39 63	- 10 88
Oct	1 11 33 55 2		0 16 12 21	19 73	+ 7 2		89 4 15 69	36 11	- 32 28
	2 11 29 50 8		0 16 3 27	10 91	+ 7 64		89 5 12 02	33 16	- 38 81
	3 11 25 47 1		0 15 54 62	2 13	+ 7 1		89 6 7 92	29 30	- 38 57
	10 10 57 12 8		0 14 53 73	1 38	+ 7 65		89 12 37 41	52 12	- 38 29
	19 10 20 36 6		0 13 39 37	46 98	+ 7 61		89 20 32 25	52 36	- 38 89
	21 10 12 29 4		0 13 23 80	31 25	+ 7 40		89 22 11 79	31 85	- 39 91
	22 10 8 25 5		0 13 15 92	23 51	+ 7 59		89 22 58 70	20 69	- 38 01
	24 10 0 18 6		0 13 0 89	8 33	+ 7 44		89 24 35 01	56 14	- 38 60
	25 9 56 15 1		0 12 53 39	0 78	+ 7 39		89 25 22 57	43 29	- 32 28
	26 9 52 11 7		0 12 45 96	53 55	+ 7 59		89 26 8 67	22 1	- 32 16
	27 9 48 8 8		0 12 38 81	46 31	+ 7 50		89 26 53 87	11 11	- 38 93
	29 9 40 2 9		0 12 24 66	32 13	+ 7 47		89 28 23 28	43 73	- 39 5
	30 9 36 0 1		0 12 17 73	25 22	+ 7 49		89 29 6 00	26 98	- 32 02
	31 9 31 57 5		0 12 10 91	18 42	+ 7 51		89 29 48 30	9 41	- 38 89
Nov	2 9 23 51 8		0 11 57 59	5 18	+ 7 59		89 31 11 26	31 88	- 39 38
	3 9 19 49 2		0 11 51 21	58 75	+ 7 4		89 31 50 76	11 84	- 38 92
	4 9 15 47 2		0 11 45 17	42 43	+ 7 26		89 32 28 96	0 99	- 37 17
	5 9 11 44 8		0 11 38 62	46 25	+ 7 63		89 33 4 92	29 25	- 30 17
	6 9 7 43 3		0 11 32 87	40 21	+ 7 34		89 33 44 93	6 60	- 38 33
	9 8 55 38 9		0 11 15 50	22 91	+ 7 41		89 35 31 40	03 03	- 38 37
	10 8 51 38 0		0 11 10 16	17 42	+ 7 26		89 36 30	26 18	- 32 12
	11 8 47 36 9		0 11 4 68	12 09	+ 7 11		89 36 38 42	16	- 32 26
	12 8 43 35 1		0 10 59 43	6 89	+ 7 46		89 37 8 72	30 73	- 37 99
	13 8 39 34 6		0 10 54 42	1 86	+ 7 44		89 37 38 43	1 31	- 37 12
	14 8 35 33 6		0 10 49 65	56 97	+ 7 32		89 38 7 7	30 80	- 36 86
	15 8 31 32 4		0 10 44 73	52 24	+ 7 51		89 38 36 74	19 37	- 37 37
	16 8 27 32 4		0 10 40 26	47 67	+ 7 41		89 39 4 28	26 8	- 37 43
	17 8 23 32 0		0 10 36 05	43 26	+ 7 21		89 39 30 67	03 25	- 37 42
	18 8 19 31 3		0 10 31 61	39 01	+ 7 40		89 39 55 0	18 14	- 37 36
	22 8 3 32 9		0 10 16 24	23 66	+ 7 42		89 41 20 94	48 85	- 38 00
	27 7 43 37 9		0 10 0 92	8 32	+ 7 40		89 42 11 36	16 40	- 31 96
	28 7 39 39 8		0 9 58 32	5 78	+ 7 46		89 43 7 39	30 46	- 36 93
	29 7 35 41 4		0 9 56 11	3 41	+ 7 30		89 43 21 72	43 41	- 38 31
	30 7 31 44 1		0 9 53 90	1 22	+ 7 32		89 43 32 23	50 07	- 37 16
Dec	2 7 23 47 3		0 9 50 10	57 38	+ 7 28		89 43 50 50	15 01	- 35 54
	3 7 19 50 8		0 9 48 53	50 73	+ 7 20		89 44 1 97	23 19	- 38 78
	4 7 15 52 5		0 9 47 16	54 28	+ 7 12		89 44 7 67	30 07	- 37 60
	6 7 7 58 3		0 9 44 62	51 90	+ 7 28		89 44 19 61	40 34	- 39 27
1845									
Sept	24 12 18 37 1		0 32 28 75	37 01	+ 8 26		87 17 41 26	58 57	- 12 69
	25 12 14 32 5		0 32 20 09	28 21	+ 8 12		87 18 38 69	50 2	- 43 14
	26 12 10 28 1		0 32 11 35	19 38	+ 8 03		87 19 34 41	51 98	- 42 43
	28 12 2 16 5		0 31 53 68	1 63	+ 7 95		87 21 30 74	45 72	- 45 02
	29 11 58 13 7		0 31 44 69	52 75	+ 8 06		87 22 26 07	42 66	- 43 41
	30 11 54 8 8		0 31 35 70	43 84	+ 8 14		87 23 23 89	39 59	- 44 30
Oct	1 11 50 4 4		0 31 26 94	34 97	+ 8 03		87 24 19 76	36 53	- 43 23
	2 11 45 59 6		0 31 17 94	26 05	+ 8 11		87 25 15 08	32 74	- 42 34
	3 11 41 55 4		0 31 9 55	17 16	+ 7 61		87 26 12 40	30 25	- 42 15
	7 11 25 26 0		0 30 33 66	41 69	+ 8 03		87 29 57 36	16 46	- 40 90
	15 10 52 59 7		0 29 24 24	32 11	+ 7 87		87 37 21 52	38 36	- 43 16
	20 10 32 37 6		0 28 42 17	50 15	+ 7 98		87 41 45 10	3 32	- 41 78
	23 10 20 25 5		0 28 17 65	25 83	+ 8 18		87 44 18 73	36 66	- 42 07
	24 10 16 21 7		0 28 9 75	17 86	+ 8 11		87 45 9 37	26 68	- 42 69

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF GEORGIAN (Continued)

M	S	Lar	Tm	f	P	intOb	A	R	f	r	m	A	R	f	r	m	Err	f	N	A	P	i	t	Ob	N	P	D	f	r	m	N	P	D	f	r	m	Err	f	N	A	
Ob	t					ed	Ob	t				N	A								d		Ob	r	v	t															
1845																																									
Oct.	25	10	12	17	7	C	0	28	1	94	9	97									C	87	4	56	86	16	15											-	40	71	
	26	10	8	15	5		0	27	54	33	2	17										87	46	46	31	5	08												-	41	23
	27	10	4	10	6		0	27	46	55	54	47										87	47	34	99	53	32												-	41	67
	28	10	0	7	0		0	27	38	83	46	86										87	48	23	16	40	96												-	4	20
Nov	1	9	43	53	9		0	27	9	67	17	52										87	51	26	48	44	48												-	42	00
	2	9	39	50	6		0	27	2	46	10	34										87	52	11	39	28	52												-	42	87
	4	9	31	45	0		0	26	48	49	56	50										87	53	36	31	54	30												-	42	01
	5	9	27	42	4		0	26	41	88	49	77										87	54	19	37	35	94												-	43	43
	6	9	23	40	0		0	26	3	10	43	17										87	54	57	34	16	80												-	40	54
	7	9	19	37	5		0	26	28	57	36	69										87	55	30	29	56	84												-	42	45
	15	8	47	24	2		0	25	41	84	49	64										88	0	26	21	44	68												-	41	53
	16	8	43	23	1		0	25	36	56	44	40										88	0	57	50	16	44												-	41	06
	17	8	39	21	4		0	25	31	04	39	31										88	1	27	09	47	15												-	39	94
	20	8	7	19	6		0	24	56	49	4	26										88	4	57	68	15	55												-	42	13
Dec	6	7	23	34	0		0	24	26	06	33	91										88	7	47	68	5	22												-	42	46
	9	7	11	41	9		0	24	21	49	29	30										88	8	9	20	26	67												-	42	53
	10	7	8	44	8		0	24	20	48	28	21										88	8	13	51	31	35												-	42	16
	11	7	3	48	1		0	24	19	66	27	28										88	8	17	77	34	97												-	42	80
	17	6	40	11	2		0	24	17	60	25	52										88	8	13	45	30	53												-	42	92
	19	6	32	20	0		0	24	18	68	26	46										88	7	59	70	19	34												-	40	36
	21	6	24	30	6		0	24	20	38	28	15										88	7	45	26	3	16												-	42	10
	23	6	16	40	9		0	24	22	82	30	59										88	7	23	95	42	14												-	41	81
1846																																									
Sept	24	12	34	50	6		0	47	47	60	56	18										85	38	20	52	36	33												-	44	19
	25	12	30	46	3		0	47	38	86	47	44										85	39	16	18	31	71												-	44	47
	26	12	26	41	4		0	47	30	07	38	68										85	40	12	18	27	23												-	44	95
	28	12	18	31	9		0	47	12	32	21	02										85	42	4	46	18	61												-	4	85
	29	12	14	27	4		0	47	3	49	12	16										85	43	0	40	14	68												-	45	72
Oct	1	12	6	18	5		0	46	45	66	54	38										85	44	53	69	7	41												-	46	28
	2	12	2	13	1		0	46	36	56	45	45										85	45	48	34	3	75												-	44	59
	5	11	49	58	8		0	46	10	05	18	64										85	48	37	04	52	86												-	44	18
	8	11	37	44	6		0	46	43	21	51	82										85	51	26	69	41	77												-	44	92
	9	11	33	39	7		0	45	34	05	42	89										85	52	23	14	37	95												-	45	19
	13	11	17	20	7		0	44	58	53	7	32										85	56	5	76	21	13												-	44	63
	15	11	9	11	2		0	44	41	14	49	69										85	57	55	47	11	59												-	43	88
	24	10	32	31	2		0	43	23	86	32	60										86	5	56	74	12	58												-	44	16
	26	10	24	23	1		0	43	7	48	16	15										86	7	39	56	54	74												-	44	82
	29	10	12	11	0		0	42	43	31	52	07										86	10	8	66	23	99												-	44	67
	30	10	8	7	6		0	42	35	58	44	23										86	10	57	01	12	61												-	44	40
Nov	2	10	55	56	6		0	42	12	53	21	21										86	13	18	74	34	64												-	44	10
	3	10	51	53	4		0	42	5	12	13	73										86	14	6	51	20	68												-	45	83
	4	10	47	49	9		0	41	57	81	6	39										86	14	50	88	6	01												-	44	87
	7	10	35	41	2		0	41	36	22	44	93										86	17	2	48	17	76												-	44	72
	10	10	23	33	3		0	41	16	03	24	53										86	19	7	84	22	57												-	4	27
	18	10	51	17	3		0	40	27	22	35	80										86	24	3	05	17	72												-	40	33
	20	10	43	14	5		0	40	16	40	25	03										86	25	6	40	22	25												-	44	1
	30	10	3	11	7		0	39	32	17	40	69										86	29	28	43	43	70												-	44	73
Dec	7	10	35	18	6		0	39	11	33	19	72										86	31	24	73	40	44												-	44	29
	8	10	31	20	4		0	39	8	97	17	43										86	31	35	97	52	60												-	43	37
	9	10	27	22	9		0	39	6	92	15	32										86	31	46	73	3	56												-	43	17
	12	10	15	29	4		0	39	1	66	10	09										86	32	13	16	29	40												-	43	76
	14	10	7	35	3		0	38	59	24	7	54										86	32	25	89	40	68												-	45	21
1847																																									

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF GEORGIAN (Cont. used)

M S l T m f	P int Ob	A R f m	A R f m	Err f N A	l i t Ob	N P D f m	N l D	Err f N A
Ob rv t	rv d	Ob tl	N A		d	Ob rv t	fr m N A	
1847						/ /		
Oct 15 11 25 30 0	C	1 0 4 63	13 74	+ 9 11	C	84 19 21 96	33 07	— 48 89
18 11 13 15 4		0 59 37 72	46 95	+ 9 23		84 22 7 37	17 68	— 49 69
20 11 5 6 1		0 59 20 14	29 22	+ 9 08		84 23 56 04	6 29	— 49 75
25 10 44 43 0		0 58 36 56	45 76	+ 9 20		84 28	32 4	
Nov 4 10 4 2 2		0 57 14 51	23 59	+ 9 08		84 36 42 39	52 79	— 49 60
9 9 43 44 9		0 56 36 71	45 78	+ 9 07		84 40 29 78	41 19	— 48 59
10 9 39 41 8		0 56 29 38	38 54	+ 9 16		84 41 13 45	24 82	— 48 63
11 9 35 38 6		0 56 22 23	31 42	+ 9 19		84 41 55 82	7 68	— 48 14
15 9 19 28 0		0 55 55 17	64 14	+ 8 97		84 44 39 57	1 46	— 48 11
16 9 15 25 6		0 55 48 79	57 63	+ 8 84		84 45 18 81	30 33	— 48 48

APPARENT RIGHT ASCENSIONS AND DECLINATIONS OF THE COMETS OF JAN 1840 AND OF JAN 1845 AS OBSERVED AT MADRAS

1840 J y 4th at 5 A M s w N b lous appearance between α d β Oph uch but it became obscured by twilight bef r
 I l d b n g t l c p e to b e r p o t
 J u y 5th t 5 A M the me p p e e a s y s t e d y b t w s a g a u n s u c c s f l i o b s e r v i g t s a p p e a r c e w i t h a t e l e s c o p e
 t t h e s s t e d e y t p p e d t b e a C m t w i t h a t a i l a b o t 3 l g d e c t e d f o m t h e S
 J a u y 6th h v g a d j s t e d t h e 5 f e e t A d r o m t c t o a c t a s a E q u a t o l s e v e r a l o b s e r v a t i o s f t h e C m e t w e r e m a d e a s f l l w s

M dras M an T m f	Appar t Right	Appare t D l n a t l	N f	R i r	C m p e d l t h
Ob rv t l	A n a l		Ob rv t l		
1840		/			
Ja 6 17 7 12	17 37 30	+ 2 3	4		Ophuch
7 17 15 2	17 43 11	+ 1 49	5	b	γ Opl uch
8 17 24 1	17 49 9	+ 1 36	10		Oph u h i and p Ophuch
10 17 17 56	18 0 48	+ 1 7	6	d	k Oph ucl
1 17 26 37	18 11 6	+ 0 30	5		k Oph u h
13 17 22 36	18 16 0	+ 0 16	5		k Oph ucl
14 17 26 41	18 20 51	+ 0 1	10		d S r p e t u s
16 17 23 48	18 30 32	— 0 32	7	f	γ S e p t s n d 5 Aquilæ P 176
18 17 24 28	18 40 0	— 1 8	11	g	γ S e r p e n t s d S e r p e t u s
23 17 27 1	19 0 50	— 2 30	2	h	p Ophuch and e Ophuch
25 17 18 40	19 8 57	— 3 0	6	i	l Aquilæ and λ Aquilæ
28 17 22 18	19 20 27	— 3 44	9	k	z Aquilæ and Aquilæ

1845 J n a y 4th t 7 P M a C m t was seen towards the S utl west w th a tail of about 4 long directel from the Sun
 b t b f o r e a s t u m n t c o u l d b e a d j u s t e d f o r i t s o b s e r v a t i o n i t h a d b e c o m e o b s u r e d b y c l o u d s w h i c h s k i r t e d t h e h o r i z o n n t l a t
 d r e t

January 5th hav g d j u t e d t h e 5 f e t A c h o m t c a s n A l t i t u d e a n d A m u t h i n s t r u m e n t t h e p l a c e o f t h e C o m e t w a s o b s e r v e d
 a s f o l l o w s T h e t a i l o f t h e C o m e t a p p e a r e d a b o t 5 l o g

Notes to the above references

- Visibl th gh th twlght
 b The C m t p p a r d a s y t e d y l h p s l t l b i g h t t i s v i s b l i n b a d t w l g h t t o o d i n a r y y e s i g h t
 Th C m t p p a r d a s y t d y t h t t h u l u s i s b e t t e r f i n d
 d Th C m t p p a r e d b t l t l i f t l l a t e d
 e Th C m t p p a r s p t t y n a r l y t h e m a s b f
 f Th C m t d t l b t m h t a i l b t i s t h e r m c m p c t u n f i g u r t h a n w h e n l t e n
 g Th C m t i s n e s s a l l y y f t b y a s f M n i g h t
 h Th C m t n s i d n g t h p s f t h M i s t m c h f a i n t e t h w h l a s t t w p p e a r s m o c o m p a c t t h a n h e r e t o f e
 Th C m t p p a r s f a i n t e t h w h l a s t b e r y d t w t h s t a d i n g t h t h a i r i s e r y c l
 k Th M r i n g b a u t i f u l l y c l d t h C m e t t h e b g h t t h n n t h 25th

APPARENT RIGHT ASCENSIONS AND DECLINATIONS OF THE COMET OF JANUARY 1845 (*Continued*)

Mad as M Ob	T m f ti	Appar t Right A i	Appar t D lin ti	N f Observ tio	R f	Compared with
1845 J	5 6 47 31	22 5 7	—44 49 10	15		Erid ni Gus a d β Grus
	6 6 48 33	22 18 6	—44 49 20	15		E d n d β Grus
	7 6 53 13	22 30 35	—44 42 45	10		G s a l β Grus
	8 6 52 15	22 42 38	—44 27 39	10		G and β Grus
	9 6 46 23	22 54 31	—44 12 16	5		β G s
	10 6 46 4	23 6 25	—43 50 29	5		β G s
	11 6 51 23	23 17 45	—43 21 15	5		β Grus
	12 6 42 27	23 28 46	—42 53 54	5		β G
	13 7 0 17	23 39 38	—42 21 49	4		Γ m lhaut
	14 6 50 23	23 49 52	—41 43 40	10		Phœ cs
	15 6 47 12	23 59 42	—41 6 39	5		α Phœ s
	16 6 35 14	0 9 4	—40 24 30	5		Phœ c
	17 6 50 54	0 18 29	—39 40 57	5		Phœ cs
	18 6 40 47	0 27 3	—38 56 38	5		Phœ cs
	19 6 43 27	0 35 24	—38 8 58	5		Phœ cs
	21 7 17 20	0 51 12	—36 30 56	11	α	Phœ cs
	22 6 56 17	0 58 50	—35 46 43	6		χ Phœ cs
	23 6 40 36	1 5 54	—34 53 44	6		χ Plœ cs
	24 6 40 49	1 12 28	—34 2 44	6		χ Phœ cs
	25 7 12 16	1 18 55	—33 9 44	7		χ Phœ cs
	26 6 46 5	1 25 2	—32 22 44	6		χ Plœ s
	27 6 59 42	1 30 57	—31 33 43	6		χ Phœ cs
	28 7 15 38					
	29 6 58 2	1 42 10	—29 58 31	12		χ Plœ s and Phœ cs
	30 6 50 47	1 47 21	—29 9 5	6		Phœ cs
	31 7 3 3	1 52 18	—28 21 55	6		Phœ cs
Γ b	1 6 53 43	1 57 16	—27 34 55	6		Phœ cs
	3 6 57 46	2 6 21	—26 2 55	6		Phœ cs
	4 6 56 22	2 10 53	—25 26 56	10		Phœ cs and τ^2 Eridani
	5 6 55 41	2 15 13	—24 44 56	5		Eridani
	6 6 53 9	2 19 1	—24 1 56	5		L da
	7 7 0 19	2 23 4	—23 21 56	10		E d n
	8 6 55 26	2 26 51	—22 39 56	6		E d n
	9 6 54 1	2 30 28	—21 59 26	10		Erid n
	10 6 59 26	2 33 52	—21 24 26	8		E d n
	11 7 2 6	2 37 21	—20 47 56	5		Eridan
	12 7 1 44	2 40 48	—20 10 56	5		Erida
	13 6 57 4	2 44 2	—19 30 56	5		E dan
	14 7 3 43	2 47 14	—18 53 56	5		Eridan
	15 7 7 11	2 50 18	—18 21 56	5		Erida
	16 6 57 23	2 53 7	—17 45 56	5	β	E dan
	17 7 6 52	2 56 10	—17 12 56	5		Er lan
	18 7 3 9	2 59 5	—16 36 56	5		τ^2 Erida
	19 7 6 11	3 1 56	—16 5 0	10		Erida and Eridan
	20 7 0 1	3 4 29	—15 34 56	5		τ^2 Erida
	21 7 1 8	3 7 18	—15 2 30	10		Erid n and τ^2 Eridan
	23 7 8 40	3 12 15	—14 7 56	5		Eridan
	24 7 6 35	3 14 44	—13 38 56	5		E dan
	25 7 22 37	3 17 23	—13 12 30	10		τ^2 Erida and τ^2 Eridan

The Comet having now arrived at the point where it will be observed with the first of the tables adjusted as an Equatorial the observations in this table must be taken into account of the difference of Right Ascension and Declination between the Comet and the Star with which it has been compared.

During the past month the Comet has gradually become more concentrated in position and in the same position less bright. On the evening it had been very faint as seen with power of 60.

M dras M an Tim f Ob t	Appar t Right As nal	Apparent Declin ti	N f Ob rv ti	R f	C mp d with
1845					
F b 26 7 9 39	3 19 37	—12 44 4	5	b	ξ Er d 1
27 7 16 4	3 22 3	—12 19 4	5	b	ξ Er d n
28 7 11 57	3 24 19	—11 53 4	5	b	ξ E idan
Mar 1 7 11 35	3 26 44	—11 27 4	5	b	ξ F idan
2 7 13 6	3 28 49	—11 1 4	5	b	ξ E d
3 7 7 47	3 31 3	—10 37 4	5	b	ξ E d
4 7 10 23	3 33 7	—10 14 4	5	b	ξ E da
5 7 26 9	3 35 24	—9 52 4	5		ξ E d n
6 7 11 27	3 37 23	—9 29 4	5		ξ E dan
7 7 20 8	3 39 7	—9 5 4	5		ξ E d
8 7 43 8	3 41 47	—8 46 4	5	d	ξ E da
9 7 23 13	3 43 27	—8 25 4	5	d	ξ Er d 1
10 7 32 15	3 45 43	—8 2 4	5	d	ξ E d
11 7 3 15	3 47 29	—7 43 4	5	d	ξ E dan

Obs rv d by fth N ti Assistants (S h)
 d S with t m diff lty with ut light in th fld Th last thr b v tions w m d by um t g t l m at w l ch t l Com t h d r r d
 t th nt fth fld fth T l p s t w a s t f t t d m t f l fld b g illum i n d i n th l g h t d g r

POSITION OF THE ECLIPTIC FROM THE MADRAS SOLAR OBSERVATIONS

Th nvestigation of the pos ti n of the Ecl pt c f om the observations of the Sun in the years 1831 1832 and 1833 as given in Vols I and II of the M dras Res lt a e by e son of the err neous d v n of the Mural Circle—necessarily to some extent in error w l h ende s t necessary that I sh uld here fu sh the amended ecomputation

The mp ove ne ts made n the Naut cal Almanac how ver s 1833 havi g ended r it c nvenient to adopt a more comprehen ve meth d f comput t on than had p e ously been empl yed I had tho ght t suffic ent he e for these three years to furnish only th me ded results and for the pe iod since elapsed to furn sh th details of the comput tions—thus

D to	Ob erv tions f th S to the Equ nox	Ob ervat ons f th S t th S lat
	N Ob e ti ns E f Eq P int	N Ob rv ti M an Obl i lty Jan ary 1 183
1831	36 + 0 223	69 23 27 39 37
1832	98 + 0 074	73 23 27 41 10
1833	77 + 0 174	80 23 27 39 26

Since th s pe d the computation has been performed w th referenc to the method of *Normal Pl cos* which consists of the com par son of *all* the observations with the pla es from the N ut cal Alm ac the errors of A R and N P D thus deducd re p oper ly grouped and c nverted to erro s f E l p t i c Pol ar D s t n e * a s s m i g these errors to a s e from an erroneous pos t of the eclipt c a s s m e d i n the N t o l Alma c they may be represent d by $x + c$ s Sun s lo g + $y \times$ in Sun s long + z wh ch quat s m m e d a t e l y lead to the solut on of the problem as w ll best appear from the e amples which now follow

By th d f P f Ary T bl

M n e r i f the S u A R d N P D a s t e p l t e d f m t h N u t c l A l m a n a c s t g t h e r w t h t h e c r r e s p n d g r s
n t h E l p t c P l a r D t a r c e

	M a n D y	E l i R	N _{Ob} f	L i N P D	N _{Ob} f	Err i E l p t l P D
	J n r y —	—	—	— 0 556	17	—
	F b r y 16	— 0 401	22	+ 1 906	27	— 0 217
	M h r y 16	— 0 674	31	+ 1 186	28	— 2 915
	A p l 18	— 0 475	16	+ 0 001	28	— 2 516
	M y 16	— 0 526	24	+ 0 018	26	— 1 808
	J 17	— 0 305	10	+ 0 284	17	+ 0 138
	J l y 17	— 0 244	14	— 1 198	22	— 0 586
	A g u t 15	— 0 477	8	— 0 591	17	+ 1 672
	S p t m b e r 17	— 0 290	17	— 0 009	19	+ 1 715
	O t b 16	— 0 176	18	+ 1 628	18	+ 2 484
	N o v m b e r 17	— 0 154	17	+ 0 3 5	20	+ 0 883
	D m b 17	— 0 228	20	— 0 198	23	— 0 070

A s s u m i n g t h e e n t i r e E l p t c P l a r D t a n c e t o b e r e p r e s e n t e d b y t h e f o r m u l a $x \times C s$ S u n s l o n g i t u d e + $y \times S n$ S s
l g t d + z w e g e t

(I)	{	Jan y —	//	—	—	—	w = —
		Feb ary 16	— 0 217	= + 0 8379	— 0 5459	y + z	v = 12
		March 16	— 2 915	= + 0 9962	x — 0 0874	y +	= 15
(II)	{	April 18	— 2 516	= + 0 8870	x + 0 4617	y +	= 10
		M y 16	— 1 808	= + 0 5788	+ 0 81 5	y +	v = 12
		J n e 17	+ 0 138	= + 0 0814	x + 0 9967	y + z	= 6
(III)	{	July 17	— 0 586	= — 0 4057	x + 0 9140	y + z	w = 9
		August 15	+ 1 672	= — 0 7848	+ 0 6198	y + z	w = 5
		S p t e m b r 17	+ 1 715	= — 0 9938	+ 0 1112	y +	v = 9
(IV)	{	Oct ber 16	+ 2 484	= — 0 9260	x — 0 3776	y + z	= 9
		November 17	+ 0 883	= — 0 5845	x — 0 8114	y + z	w = 9
		December 17	— 0 070	= — 0 0929	— 0 9957	y +	= 11

A l t e r i n g t h e w e i g h t s (w) s o a s t o r e n d e r t h e n u m b e r s i n e a c h q u a r t e r t h e s a m e a n d c a r r y i n g o u t t h e m u l t i p l i c a t i o

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Mean errors of the Sun's A R and N P D as interpolated from the Nautical Almanacs together with the corresponding errors in the Ecliptic Polar Distance

	Month	Err in A R	N _{Obs}	Err in N P D	N _{Obs}	Err in Ecliptic P D
	January 16	— 0.374	26	+ 0.852	24	— 0.116
	February 16	— 0.421	29	+ 1.229	25	— 0.919
	March 16	— 0.282	30	+ 1.223	28	— 0.555
	April 16	— 0.311	30	+ 1.424	29	— 0.337
	May 18	— 0.158	23	+ 0.975	24	+ 0.438
	June 14	— 0.317	17	+ 0.125	18	— 0.103
	July 15	— 0.432	13	— 0.448	22	+ 0.52
	August 19	— 0.162	5	— 1.040	13	— 0.175
	September 20	— 0.091	17	— 0.571	14	+ 0.020
	October 15	— 0.150	20	+ 1.229	18	+ 1.970
	November 17	— 0.360	13	+ 1.121	15	+ 2.318
	December 15	— 0.312	13	— 1.208	16	— 0.988

Assuming the error in Ecliptic Polar Distance to be represented by the formula $x \times \cos S$ sun's longitude $+ y \times \sin S$ sun's longitude $+ w$ we get

(I)	January	16	— 0.116	=	+ 0.4263	— 0.9046	y	+ z	v	=	12
	February	16	— 0.919	=	+ 0.8258	— 0.5640	y	+ z	w	=	14
	March	16	— 0.555	=	+ 0.9972	x — 0.0744	y	+ w		=	11
(II)	April	16	— 0.337	=	+ 0.8966	x + 0.4428	y	+ v		=	15
	May	18	+ 0.138	=	+ 0.5405	x + 0.8413	y	+ v		=	12
	June	14	— 0.103	=	+ 0.1190	x + 0.9929	y	+ w		=	9
(III)	July	15	+ 0.552	=	— 0.3862	x + 0.9224	y	+ z		=	8
	August	19	— 0.175	=	— 0.8313	x + 0.5558	y	+ v		=	4
	September	20	+ 0.020	=	— 0.9989	x + 0.0468	y	+ w		=	8
(IV)	October	15	+ 1.970	=	— 0.9275	x — 0.3738	y	+ w		=	9
	November	17	+ 2.318	=	— 0.5736	x — 0.8191	y	+ w		=	7
	December	15	— 0.988	=	— 0.1146	x — 0.9934	y	+ w		=	7

Altogether the weights (w) so as to render the numbers in each quartet the same and carrying out the multiplication

I	{	—	1 160	=	+	4 2630	x	—	9 0460	y	+	10	{	— 15 900 = + 22 4930 x — 15 4300 y + 30
		—	9 190	=	+	8 2580	x	—	5 6400	y	+	10		
		—	5 550	=	+	9 9720	x	—	0 7440	y	+	10		
II	{	—	3 707	=	+	9 8626	x	+	4 8708	y	+	11	{	— 0 254 = + 16 3386 x + 22 2199 y + 30 z
		+	4 380	=	+	5 4050	x	+	8 4130	y	+	10		
		—	0 927	=	+	1 0710	x	+	8 9361	y	+	9		
III	{	+	6 624	=	—	4 6344	x	+	11 0688	y	+	12	{	+ 5 814 = — 21 6090 x + 14 962 y + 30
		—	1 050	=	—	4 9878	x	+	3 3348	y	+	6		
		+	0 240	=	—	11 9868	x	+	0 5616	y	+	12		
IV	{	+	23 640	=	—	11 1300	x	—	4 4856	y	+	12	{	+ 35 610 = — 17 3238 x — 20 7981 y + 30
		+	20 862	=	—	5 1624	x	—	7 3719	y	+	9		
		—	8 892	=	—	1 0314	x	—	8 9406	y	+	9		

$$\begin{aligned}
 & \text{I} + \text{II} + \text{III} + \text{IV} + 25.270 = - 0.1012 x + 0.9570 y + 120 \\
 & (\text{I} + \text{II}) - (\text{III} + \text{IV}) = 57.578 = + 77.7644 x + 12.6228 y \\
 & (\text{I} + \text{IV}) - (\text{II} + \text{III}) = 14.150 = + 10.4396 x - 73.4132 y \\
 & x = - 0.693 \quad y = - 0.291 \quad = + 0.212
 \end{aligned}$$

Measurements of the Sun's Apparent Distance from the North Polar Distance together with the corresponding errors in the Ecliptic Latitude

	M D y	E in A R	N _{Ob} f	E i N P D	N _{Ob} f	Error i E l p t P D
J y	17	— 0 294	22	+ 0 517	26	— 0 287
I b y	13	— 0 204	22	+ 1 146	23	+ 0 089
M l	14	— 0 203	19	+ 0 565	31	— 0 685
Ap l	17	— 0 110	26	— 0 586	29	— 1 132
M y	15	— 0 347	10	— 0 743	22	— 1 934
J	15	— 0 050	22	— 0 016	25	— 0 048
J ly	15	— 0 377	15	— 0 475	24	+ 0 390
A g t	17	— 0 224	13	+ 0 172	17	+ 1 246
S p t m b	18	— 0 171	18	— 0 206	25	+ 0 827
O t l	14	— 0 335	4	+ 0 132	16	+ 1 995
N v e m b	24	— 0 410	2	— 1 557	9	— 0 370
D m b	22	— 0 326	9	— 2 518	14	— 2 24

Assuming the error in Ecliptic Polar Distance to be represented by the formula $x \times \cos S$ in longitude + $y \times S$ in latitude + z we get

$$\begin{aligned}
 \text{(I)} \quad & \left\{ \begin{array}{l} \text{J u a y} \quad 17 \quad - \quad 0 \ 287 \quad = \quad + \quad 0 \ 4545 \quad x \quad - \quad 0 \ 8907 \quad y \quad + \quad z \quad w \quad = \quad 12 \\ \text{F e b u a r y} \quad 13 \quad + \quad 0 \ 089 \quad = \quad + \quad 0 \ 8134 \quad x \quad - \quad 0 \ 5816 \quad y \quad + \quad \quad w \quad = \quad 11 \\ \text{M a r c h} \quad 14 \quad - \quad 0 \ 685 \quad = \quad + \quad 0 \ 9936 \quad x \quad - \quad 0 \ 1132 \quad y \quad + \quad \quad v \quad = \quad 12 \end{array} \right. \\
 \text{(II)} \quad & \left\{ \begin{array}{l} \text{A p r i l} \quad 17 \quad - \quad 1 \ 132 \quad = \quad + \quad 0 \ 8909 \quad x \quad + \quad 0 \ 4542 \quad y \quad + \quad \quad = \quad 14 \\ \text{M a y} \quad 15 \quad - \quad 1 \ 934 \quad = \quad + \quad 0 \ 5857 \quad x \quad + \quad 0 \ 810 \quad y \quad + \quad \quad = \quad 7 \\ \text{J u n e} \quad 15 \quad - \quad 0 \ 048 \quad = \quad + \quad 0 \ 1068 \quad x \quad + \quad 0 \ 9943 \quad y \quad + \quad \quad w \quad = \quad 12 \end{array} \right. \\
 \text{(III)} \quad & \left\{ \begin{array}{l} \text{J u l y} \quad 15 \quad + \quad 0 \ 390 \quad = \quad - \quad 0 \ 3821 \quad x \quad + \quad 0 \ 9211 \quad y \quad + \quad \quad v \quad = \quad 9 \\ \text{A g u s t} \quad 17 \quad + \quad 1 \ 246 \quad = \quad - \quad 0 \ 8097 \quad x \quad + \quad 0 \ 5868 \quad y \quad + \quad \quad v \quad = \quad 7 \\ \text{S e p t e m b e r} \quad 18 \quad + \quad 0 \ 827 \quad = \quad - \quad 0 \ 9963 \quad x \quad + \quad 0 \ 0857 \quad y \quad + \quad \quad w \quad = \quad 10 \end{array} \right. \\
 \text{(IV)} \quad & \left\{ \begin{array}{l} \text{O c t o b e r} \quad 14 \quad + \quad 1 \ 995 \quad = \quad - \quad 0 \ 9354 \quad x \quad - \quad 0 \ 3535 \quad y \quad + \quad z \quad w \quad = \quad 3 \\ \text{N o v e m b e r} \quad 24 \quad - \quad 0 \ 370 \quad = \quad - \quad 0 \ 4720 \quad x \quad - \quad 0 \ 8816 \quad y \quad + \quad \quad w \quad = \quad 2 \\ \text{D e c e m b e r} \quad 22 \quad - \quad 2 \ 524 \quad = \quad + \quad 0 \ 0046 \quad x \quad - \quad 1 \ 0000 \quad y \quad + \quad \quad w \quad = \quad 5 \end{array} \right.
 \end{aligned}$$

Altering the weights (w) so as to render the numbers in each quadrant the same and carrying out the multiplication

$$\begin{aligned}
 \text{I} \quad & \left\{ \begin{array}{l} - \quad 2 \ 583 \quad = \quad + \quad 4 \ 0905 \quad x \quad - \quad 8 \ 0163 \quad y \quad + \quad 9 \\ + \quad 0 \ 712 \quad = \quad + \quad 6 \ 5072 \quad x \quad - \quad 4 \ 6528 \quad y \quad + \quad 8 \\ - \quad 6 \ 165 \quad = \quad + \quad 8 \ 9424 \quad x \quad - \quad 1 \ 0188 \quad y \quad + \quad 9 \end{array} \right\} - \quad 8 \ 036 \quad = \quad + \quad 19 \ 5401 \quad x \quad - \quad 13 \ 6879 \quad y \quad + \quad 26 \\
 \text{II} \quad & \left\{ \begin{array}{l} - \quad 11 \ 320 \quad = \quad + \quad 8 \ 9090 \quad x \quad + \quad 4 \ 5420 \quad y \quad + \quad 10 \\ - \quad 11 \ 604 \quad = \quad + \quad 3 \ 5142 \quad x \quad + \quad 4 \ 8630 \quad y \quad + \quad 6 \\ - \quad 0 \ 480 \quad = \quad + \quad 1 \ 0680 \quad x \quad + \quad 9 \ 9430 \quad y \quad + \quad 10 \end{array} \right\} - \quad 23 \ 404 \quad = \quad + \quad 13 \ 4912 \quad x \quad + \quad 19 \ 3480 \quad y \quad + \quad 26 \\
 \text{III} \quad & \left\{ \begin{array}{l} + \quad 3 \ 510 \quad = \quad - \quad 3 \ 4389 \quad x \quad + \quad 8 \ 3169 \quad y \quad + \quad 9 \\ + \quad 8 \ 722 \quad = \quad - \quad 5 \ 6679 \quad x \quad + \quad 4 \ 1076 \quad y \quad + \quad 7 \\ + \quad 8 \ 270 \quad = \quad - \quad 9 \ 9630 \quad x \quad + \quad 0 \ 870 \quad y \quad + \quad 10 \end{array} \right\} + \quad 20 \ 502 \quad = \quad - \quad 19 \ 0698 \quad x \quad + \quad 13 \ 2815 \quad y \quad + \quad 26 \\
 \text{IV} \quad & \left\{ \begin{array}{l} + \quad 15 \ 960 \quad = \quad - \quad 7 \ 4832 \quad x \quad - \quad 2 \ 8280 \quad y \quad + \quad 8 \\ - \quad 2 \ 220 \quad = \quad - \quad 2 \ 8320 \quad x \quad - \quad 5 \ 2896 \quad y \quad + \quad 6 \\ - \quad 30 \ 288 \quad = \quad + \quad 0 \ 0552 \quad x \quad - \quad 12 \ 0000 \quad y \quad + \quad 12 \end{array} \right\} - \quad 16 \ 584 \quad = \quad - \quad 10 \ 2600 \quad x \quad - \quad 20 \ 1176 \quad y \quad + \quad 26 \\
 & \begin{aligned} & \text{I} \quad + \quad \text{II} \quad + \quad \text{III} \quad + \quad \text{IV} \quad - \quad 27 \ 486 \quad = \quad + \quad 3 \ 7015 \quad x \quad - \quad 1 \ 1760 \quad y \quad + \quad 104 \quad z \\ & (\text{I} \quad + \quad \text{II}) \quad - \quad (\text{III} \quad + \quad \text{IV}) \quad - \quad 35 \ 394 \quad = \quad + \quad 62 \ 3611 \quad x \quad + \quad 12 \ 4962 \quad y \\ & (\text{I} \quad + \quad \text{IV}) \quad - \quad (\text{II} \quad + \quad \text{III}) \quad - \quad 21 \ 682 \quad = \quad + \quad 14 \ 8587 \quad x \quad - \quad 66 \ 4350 \quad y \\ & x \quad = \quad - \quad 0 \ 606 \quad y \quad = \quad + \quad 0 \ 191 \quad z \quad = \quad - \quad 0 \ 240 \end{aligned} \end{aligned}$$

Mean errors of the Sun's A R d N P D as interpolated from the Nutcl Almanacs together with the corresponding errors of the Ecliptic Polar Distance

	Month	E i A R	N _{Obs}	Err i N P D	N _{Obs}	E i Ecliptic P D
	January 17	— 0 274	23	— 0 194	23	— 0 921
	February 14	— 0 419	25	+ 0 302	28	— 1 769
	March 17	— 0 355	24	+ 1 066	25	— 1 137
	April 14	— 0 380	19	+ 1 578	21	— 0 613
	May 17	— 0 502	20	+ 0 935	23	— 0 774
	June 15	— 0 296	11	— 0 621	19	— 0 818
	July 15	— 0 277	17	— 0 889	25	— 0 252
	August 12	— 0 422	5	— 0 489	17	+ 1 439
	September 15	— 0 262	12	+ 0 011	15	+ 1 5 8
	October 15	— 0 130	17	— 1 086	19	+ 1 384
	November 13	— 0 379	8	— 0 307	10	+ 1 148
	December 17	— 0 284	17	+ 0 230	16	+ 0 3 9

Assuming the error in Ecliptic Polar Distance to be represented by the formula $x \times \cos \text{Sun's longitude} + y \times \text{Sun's longitude} + w$ we get

(I)	Jary	17	— 0 924	=	+	0 4 06	x	— 0 8927	y	+	w	=	11
	February	14	— 1 769	=	+	0 8210	x	— 0 5709	y	+	w	=	13
	March	17	— 1 137	=	+	0 9978	x	— 0 0657	y	+	w	=	12
(II)	April	14	— 0 613	=	+	0 9146	x	+ 0 4043	y	+	w	=	10
	May	17	— 0 774	=	+	0 5614	x	+ 0 8276	y	+	w	=	11
	June	15	— 0 818	=	+	0 1109	x	+ 0 9938	y	+	w	=	7
(III)	July	15	— 0 252	=	—	0 3784	x	+ 0 9256	y	+	w	=	10
	August	12	+ 1 439	=	—	0 7551	x	+ 0 6556	y	+	w	=	4
	September	15	+ 1 558	=	—	0 9901	x	+ 0 1403	y	+	w	=	7
(IV)	October	15	+ 1 384	=	—	0 9306	x	— 0 3660	y	+	w	=	9
	November	13	+ 1 148	=	—	0 6363	x	— 0 7714	y	+	w	=	4
	December	17	+ 0 379	=	—	0 0880	x	— 0 9961	y	+	w	=	8

Altering the weights (w) so as to render the numbers in each quarter the same and carrying out the multiplication

I	— 7 392	=	+	3 6048	x	— 7 1416	y	+	8	}	— 35 315 = + 20 7950 x — 13 4419 y + 27
	— 17 690	=	+	8 2100	x	— 5 7090	y	+	10		
	— 10 233	=	+	8 9802	x	— 6 5913	y	+	9		
II	— 6 130	=	+	9 1460	x	+ 4 0430	y	+	10	}	— 19 596 = + 15 363 x + 19 2756 y + 27
	— 7 740	=	+	5 6140	x	+ 8 2760	y	+	10		
	— 5 726	=	+	0 7763	x	+ 6 9566	y	+	7		
III	— 3 276	=	—	4 9192	x	+ 12 0328	y	+	13	}	+ 17 941 = — 17 6056 x + 16 5735 y + 27
	+ 7 195	=	—	3 7755	x	+ 3 2780	y	+	5		
	+ 14 022	=	—	8 9109	x	+ 1 2627	y	+	9		
IV	+ 15 224	=	—	10 2366	x	— 4 0260	y	+	11	}	+ 25 133 = — 14 3861 x — 18 8401 y + 27
	+ 5 740	=	—	3 1815	x	— 3 8570	y	+	5		
	+ 4 169	=	—	0 9680	x	— 10 9571	y	+	11		

$$\begin{aligned}
 & \text{I} + \text{II} + \text{III} + \text{IV} = 11 837 = + 4 3396 x + 3 5671 y + 108 \\
 & (\text{I} + \text{II}) - (\text{III} + \text{IV}) = 97 985 = + 68 3230 x + 8 1003 y \\
 & (\text{I} + \text{IV}) - (\text{II} + \text{III}) = 8 527 = + 8 4782 x - 68 1311 y
 \end{aligned}$$

$$x = - 1 428 \quad y = - 0 052 \quad w = - 0 051$$

M n e s of th S A R i d N P D as i te p l t e d f m th N ut al Alm ac together w th the corresp nd ng err s
1 the L i p t c Pol D st n

	M D y	Err i A R	N _{Ob} f	Erro in N P D	N _{Ob} f	Er in Echptl P D
	J n ry 17	— 0 453	21	+ 1 188	24	— 0 038
	F b u y 15	— 0 389	24	+ 1 910	26	— 0 124
	M h 17	— 0 637	23	+ 2 724	29	— 1 290
	Ap l 14	— 0 562	17	+ 1 883	22	— 1 325
	M y 13	— 0 496	16	+ 1 748	22	— 0 149
	J 21	— 0 247	8	— 0 086	15	— 0 111
	J ly 18	— 0 266	8	— 0 597	21	+ 0 081
	A g st 11	— 0 495	6	— 0 320	13	+ 1 883
	S p t e m b 22	— 0 477	9	+ 0 321	14	+ 3 142
	O t b e r 14	— 0 308	13	+ 1 277	17	+ 2 907
	N o v e m b 23	— 0 148	12	— 0 805	13	— 0 350
	D e c e m b —	— 0 366	17	—	—	—

A um ng the e n L e l p t c Polar D stance to be rep esented by the form la $w \times \cos S$ n s longit de + $y \times S$ Sun s
l ngitude + ve get

(I)	{	January 17	— 0 038	= + 0 4467	w — 0 8947	y + z	w = 11
		Γ b r u y 15	— 0 124	= + 0 8286	w — 0 5599	y +	w = 12
		M r h 17	— 1 290	= + 0 9976	w — 0 0698	y + z	w = 13
(II)	{	Ap l 14	— 1 325	= + 0 8946	w + 0 4470	y +	w = 10
		M y 13	— 0 149	= + 0 6189	w + 0 7855	y +	w = 9
		J n e 21	— 0 111	= + 0 0151	w + 0 9999	y +	w = 5
(III)	{	July 18	+ 0 081	= — 0 4208	w + 0 9072	y +	w = 6
		A g u s t 11	+ 1 883	= — 0 7412	w + 0 6713	y +	w = 4
		S e p t e m b e r 22	+ 3 142	= — 0 9997	w + 0 0253	y +	w = 5
(IV)	{	O t b 14	+ 2 907	= — 0 9383	w — 0 3458	y +	w = 7
		N v e m b e r 23	— 0 350	= — 0 4947	w — 0 8691	y + z	w = 6
		D e c e m b e r —	—	= —	—	—	w

Altering the weights (w) so as to render the numbers in each quarter the same and carrying out the multipl cat on

I	{	— 0 266	= + 3 1269	w — 6 2629	y + 7	} — 12 868 = + 18 7341 w — 11 3703 y + 24
		— 0 992	= + 6 6288	w — 4 4792	y + 8	
		— 11 610	= + 8 9784	w — 0 6282	y + 9	
II	{	— 132 0	= + 8 9450	w + 4 4700	y + 10	} — 15 146 = + 14 5906 w + 16 5390 y + 24
		— 1 341	= + 5 5701	w + 7 0695	y + 9	
		— 0 550	= + 0 0755	w + 4 9995	y + 5	
III	{	+ 0 729	= — 3 7872	w + 8 1648	y + 9	} + 39 046 = — 16 9732 w + 13 0663 y + 24
		+ 13 181	= — 5 1884	w + 4 6991	y + 7	
		+ 25 136	= — 7 9976	w + 0 2024	y + 8	
IV	{	+ 37 791	= — 12 1979	w — 4 4954	y + 13	} + 33 941 = — 17 6396 w — 14 0555 y + 24
		— 3 850	= — 5 4417	w — 9 5601	y + 11	
I + II + III + IV				+ 44 973	= — 1 2881 w + 4 1795 y + 96	
(I + II) — (III + IV)				— 101 001	= + 67 9375 w + 6 1579 y	
(I + IV) — (II + III)				— 2 827	= + 3 4771 w + 55 0311 y	

$$x = -1483 \quad y = -0042 \quad = +0450$$

Mean e s of the Sun's A R and N P D as terpolated f om the Na t al Alm acs t g ther w th the co r spond ng rror
n the Ecl pt c P lar D t cs

	M an D y	Err i A R	N _{Ob} f	Err i N P D	N _{Ob} f	Err in E l p t i P D
	J ry 17	— 0 274	23	— 0 194	23	— 0 924
	F b y 14	— 0 419	25	+ 0 302	28	— 1 769
	Mar h 17	— 0 355	24	+ 1 066	25	— 1 137
	Ap l 14	— 0 380	19	+ 1 578	21	— 0 613
	M y 17	— 0 502	20	+ 0 935	23	— 0 774
	J 15	— 0 296	11	— 0 621	19	— 0 818
	J ly 15	— 0 277	17	— 0 889	25	— 0 252
	A g st 12	— 0 422	5	— 0 489	17	+ 1 439
	S ptemb r 15	— 0 262	12	+ 0 011	15	+ 1 558
	O tob 15	— 0 430	17	— 1 086	19	+ 1 384
	N vembe 13	— 0 379	8	— 0 307	10	+ 1 148
	D mb 17	— 0 284	17	+ 0 230	16	+ 0 3 9

Assum ng the e o Ecl pti P l i D stance to be rep ese ted by the f rm la $x \times C$ S n s l g tude + $y \times S n$ S n s
l g tude + we g t

(I)	J y 17	— 0 924	= +	0 4506	x —	0 8927	y +	v =	11
	F b y 14	— 1 769	= +	0 8210	x —	0 5709	y +	w =	13
	M r h 17	— 1 137	= +	0 9978	x —	0 0657	y +	w =	12
(II)	Ap l 14	— 0 613	= +	0 9146	x +	0 4043	y +		10
	M y 17	— 0 774	= +	0 5614	x +	0 8276	y +	w =	11
	J 15	— 0 818	= +	0 1109	x +	0 9938	y +	w =	7
(III)	J ly 15	— 0 252	= —	0 3784	x +	0 9256	y +	w =	10
	A g st 12	+ 1 439	= —	0 7551	x +	0 6556	y +	w =	4
	S ptember 15	+ 1 558	= —	0 9901	x +	0 1403	y +	w =	7
(IV)	O t b 15	+ 1 384	= —	0 9306	x —	0 3660	y +	w =	9
	N vembe 13	+ 1 148	= —	0 6363	x —	0 7714	y +	w =	4
	December 17	+ 0 379	= —	0 0880	x —	0 9961	y +	w =	8

Alter g the w ghts (w) so as to rend r the umbe ea h qua ter the same d carry g out the multipl t

I	— 7 39	= +	3 6048	x —	7 1416	y +	8	}	— 35 315 = + 20 79 0 x — 13 4419 y + 27
	— 17 690	= +	8 2100	x —	5 7090	y +	10		
	— 10 233	= +	8 9802	x —	6 5913	y +	9		
II	— 6 130	= +	9 1460	x +	4 0430	y +	10	}	— 19 596 = + 15 5363 x + 19 2756 y + 27 z
	— 7 740	= +	5 6140	x +	8 2760	y +	10		
	— 5 726	= +	0 7763	x +	6 9566	y +	7		
III	— 3 276	= —	4 9192	x +	12 0328	y +	13	}	+ 17 941 = — 17 6056 x + 16 5735 y + 27
	+ 7 195	= —	3 7755	x +	3 2780	y +	5		
	+ 14 022	= —	8 9109	x +	1 2627	y +	9		
IV	+ 15 224	= —	10 2366	x —	4 0260	y +	11	}	+ 25 133 = — 14 3861 x — 18 8401 y + 27 z
	+ 5 740	= —	3 1815	x —	3 8570	y +	5		
	+ 4 169	= —	0 9680	x —	10 9571	y +	11		

I + II	+ III	+ IV	— 11 837	= +	4 3396	x +	3 5671	y +	108
(I + II)	— (III + IV)	— 97 985	= +	68 3230	x +	8 1003	y		
(I + IV)	— (II + III)	— 8 527	= +	8 4782	x —	68 1311	y		

$$a = - 1 428 \quad y = - 0 052 \quad z = - 0 051$$

M n s f th S A R and N P D as nt rp l ted fr m the N utical Alman c together with the correspo d g errors
th E lptic P l Distance

	M D y	Err i A R	N _{Ob} f	E in N P D	N _{Ob} f	Erro in Ecliptic P D
	J n ry 17	— 0 453	21	+ 1 188	24	— 0 038
	F b ry 15	— 0 389	24	+ 1 910	26	— 0 124
	Ma ch 17	— 0 637	23	+ 2 724	29	— 1 290
	Ap l 14	— 0 562	17	+ 1 883	22	— 1 325
	M y 13	— 0 496	16	+ 1 748	22	— 0 149
	J e 21	— 0 247	8	— 0 086	15	— 0 111
	J ly 18	— 0 266	8	— 0 597	21	+ 0 081
	A g st 11	— 0 495	6	— 0 320	13	+ 1 883
	S ptemb 22	— 0 477	9	+ 0 321	14	+ 3 142
	O tob 14	— 0 308	13	+ 1 277	17	+ 2 907
	N vemb r 23	— 0 148	12	— 0 805	13	— 0 350
	D c mb —	— 0 366	17	—	—	—

Assuming the o E lptic Polar Distance to be eprent d by the formula $w \times \cos \text{Sun's longitude} + y \times \sin \text{Sun's longitude} + z$ we get

(I)	J nua y 17	— 0 038	= + 0 4467	w — 0 8947	y +	z	w = 11
	F b y 15	— 0 124	= + 0 8286	w — 0 5599	y +	z	w = 12
	March 17	— 1 290	= + 0 9976	w — 0 0698	y +	z	w = 13
(II)	Ap l 14	— 1 325	= + 0 8946	w + 0 4470	y +	z	w = 10
	May 13	— 0 149	= + 0 6189	w + 0 7855	y +	z	w = 9
	J ne 21	— 0 111	= + 0 0151	w + 0 9999	y +	z	w = 5
(III)	July 18	+ 0 081	= — 0 4208	w + 0 9072	y +	z	w = 6
	August 11	+ 1 883	= — 0 7412	w + 0 6713	y +	z	w = 4
	S ptember 22	+ 3 142	= — 0 9997	w + 0 0253	y +	z	w = 5
(IV)	Oct be 14	+ 2 907	= — 0 9383	w — 0 3458	y +	z	w = 7
	Noven ber 23	— 0 350	= — 0 4947	w — 0 8691	y +	z	w = 6
	December —	—	= —	—	—	—	w

Altering the we ghts (w) so as to render the numbers in each quarter the same a d carrying out the multiplicat on

I	{	— 0 266 = + 3 1269	w — 6 2629	y + 7	z	} — 12 868 = + 18 7341 w — 11 3703 y + 24
		— 0 992 = + 6 6288	w — 4 4792	y + 8		
		— 11 610 = + 8 9784	w — 0 6282	y + 9		
II	{	— 13 250 = + 8 9450	w + 4 4700	y + 10		} — 15 146 = + 14 5906 w + 16 5390 y + 24
		— 1 341 = + 5 5701	w + 7 069	y + 9		
		— 0 555 = + 0 0755	w + 4 9995	y + 5		
III	{	+ 0 729 = — 3 7872	w + 8 1648	y + 9	z	} + 39 046 = — 16 9732 w + 13 0663 y + 24
		+ 13 181 = — 5 1884	w + 4 6991	y + 7	z	
		+ 25 136 = — 7 9976	w + 0 2024	y + 8		
IV	{	+ 37 791 = — 12 1979	w — 4 4954	y + 13		} + 33 941 = — 17 6396 w — 14 0555 y + 24
		— 3 860 = — 5 4417	w — 9 5601	y + 11		
"						
I + II + III + IV			+ 44 973	= — 1 2881	w + 4 1795 y + 96 z	
(I + II) — (III + IV)			— 101 001	= + 67 9375	w + 6 1579 y	
(I + IV) — (II + III)			— 2 827	= + 3 4771	w + 55 0311 y	

$$w = -1483 \quad y = -0042 \quad z = +0450$$

Manner of the Sun's Apparent N.P.D. as interpolated from the Nautical Almanac together with the corresponding errors in the Ecliptic Polar Distance

	M and y	Err. A R	N _{Ob} f	Error in N P D	N _{Ob} f	Err. in Ecliptic P D
	J ary 19	— 0 434	21	+ 1 906	15	+ 0 633
	F b ary 16	— 0 504	25	+ 1 193	26	— 1 393
	M h 16	— 0 463	28	+ 0 236	29	— 2 538
	April 12	— 0 299	10	— 0 233	22	— 1 866
	M y 19	— 0 211	12	+ 0 793	27	+ 0 111
	J n 14	— 0 255	6	+ 0 869	19	+ 0 684
	J ly 15	— 0 233	3	— 0 357	19	+ 0 184
	A gust 14	— 0 570	1	+ 0 422	18	+ 3 056
	S pt mber 20	— 0 318	4	+ 0 384	17	+ 2 250
	O t be 15	— 0 395	13	+ 0 469	19	+ 2 623
	N vember 20	— 0 475	2	— 0 435	11	+ 1 077
	D mber 13	— 0 560	4	+ 0 228	16	+ 0 720

Assuming the error in Ecliptic Polar Distance to be represented by the formula $x \times \cos S \sin g \tan d + y \times S \sin s$ longitude + we get

(I)	January 19	+ 0 633	= + 0 4743	x — 0 8803	y + z	w = 9
	February 16	— 1 393	= + 0 8368	x — 0 5490	y +	= 13
	March 16	— 2 538	= + 0 9973	x — 0 0738	y +	w = 14
(II)	April 12	— 1 866	= + 0 9245	x + 0 3811	y +	w = 7
	May 19	+ 0 111	= + 0 5260	x + 0 8505	y +	w = 8
	June 14	+ 0 684	= + 0 1193	x + 0 9929	y +	w = 5
(III)	July 15	+ 0 184	= — 0 3864	x + 0 9223	y +	w = 3
	August 14	+ 3 056	= — 0 7821	x + 0 6232	y +	w = 1
	September 20	+ 2 250	= — 0 9989	x + 0 0468	y +	w = 3
(IV)	October 15	+ 2 623	= — 0 9274	x — 0 3741	y + z	w = 8
	November 20	+ 1 077	= — 0 5292	x — 0 8485	y +	w = 2
	December 13	+ 0 720	= — 0 1498	x — 0 9887	y +	w = 3

Altering the weights (w) so as to order the numbers in each quarter the same and arraying the multiplication

I	+ 3 165	= + 2 3715	x — 4 4015	y + 5	} — 26 890 = + 16 2005 x — 8 8349 y + 20
	— 9 751	= + 5 8506	x — 3 8430	y + 7	
	— 20 304	= + 7 9784	x — 0 5904	y + 8	
II	— 13 062	= + 6 4715	x + 2 6677	y + 7	} — 8 754 = + 11 2760 x + 14 4362 y + 20
	+ 0 888	= + 4 2080	x + 6 8040	y + 8	
	+ 3 420	= + 0 5965	x + 4 9645	y + 5	
III	+ 1 656	= — 3 4776	x + 8 3007	y + 9	} + 28 018 = — 14 0319 x + 9 9683 y + 20
	+ 6 112	= — 1 5642	x + 1 2464	y + 2	
	+ 20 250	= — 8 9901	x + 0 4212	y + 9	
IV	+ 31 476	= — 11 1288	x — 4 4892	y + 12	} + 38 307 = — 13 4654 x — 11 9782 y + 20
	+ 3 231	= — 1 5876	x — 2 5455	y + 3	
	+ 3 600	= — 0 7490	x — 4 9435	y + 5 z	

I + II + III + IV	+ 30 681	= — 0 0208	x + 3 5914	y + 80
(I + II) — (III + IV)	— 101 969	= + 54 9738	x + 7 6112	y
(I + IV) — (II + III)	— 7 847	= + 5 4210	x — 45 2176	y

$$x = - 1 848 \quad y = - 0 051 \quad z = + 0 384$$

Measurements of the Sun's Apparent North Polar Distance together with the corresponding errors in the Eliptic Polar Distance

M D y	Error in A R	N _{Obs}	Error in N P D	N _{Obs}	Error in Eliptic P D
J anuary	— 0 514	11	+ 0 294	22	— 1 011
F ebruary	— 0 453	14	+ 1 258	25	— 1 015
M arch	— 0 564	5	+ 0 984	27	— 2 435
A pril	— 0 400	10	+ 0 392	22	— 1 800
M ay	— 0 157	8	+ 0 248	21	— 0 227
J une	— 0 098	18	+ 0 621	19	+ 0 536
J uly	—	—	— 0 822	19	—
A ugust	+ 0 140	4	— 1 021	14	— 1 641
S eptembe	— 0 059	12	— 2 243	19	— 1 712
O ctob	— 0 100	1	— 1 461	8	— 0 809
N ovember	— 0 273	3	— 0 509	17	+ 0 398
D ecember	— 0 320	3	— 0 377	15	+ 0 021

Assigning the error in Eliptic Polar Distance to be represented by the formula $x \times \cos S \sin \text{longitude} + y \times \sin S \sin \text{longitude}$

(I)	J anuary	15	— 1 011	= + 0 4229	x	— 0 9062	y	+	w	= 7
	F ebruary	13	— 1 015	= + 0 8136	x	— 0 5814	y	+	w	= 9
	M arch	13	— 2 435	= + 0 9915	x	— 0 1299	y	+	w	= 4
(II)	A pril	15	— 1 800	= + 0 9054	x	+ 0 4245	y	+	w	= 7
	M ay	21	— 0 227	= + 0 5002	x	+ 0 8659	y	+	w	= 6
	J une	13	+ 0 536	= + 0 1392	x	+ 0 9903	y	+	w	= 9
(III)	J uly	—	—	—	—	—	—	—	—	—
	A ugust	17	— 1 641	= — 0 8100	x	+ 0 5864	y	+	w	= 3
	S eptember	15	— 1 712	= — 0 9908	x	+ 0 1357	y	+	w	= 7
(IV)	O ctober	17	— 0 809	= — 0 9156	x	— 0 4022	y	+	w	= 1
	N ovember	19	+ 0 398	= — 0 5473	x	— 0 8369	y	+	w	= 3
	D ecember	10	+ 0 021	= — 0 2059	x	— 0 9786	y	+	w	= 2

Altering the weights (w) so as to render the numbers nearly equal and carrying out the multiplication

I	{	— 5 055	= + 2 1145	x	— 4 5310	y	+	5	}	— 19 465 = + 10 7842 x — 8 9905 y + 15
		— 7 105	= + 5 6952	x	— 4 0698	y	+	7		
		— 7 305	= + 2 9745	x	— 0 3897	y	+	3		
II	{	— 9 000	= + 4 5270	x	+ 2 1225	y	+	5	}	— 6 692 = + 7 3630 x + 11 5279 y + 15
		— 0 908	= + 2 0008	x	+ 3 4636	y	+	4		
		+ 3 216	= + 0 8352	x	+ 5 9418	y	+	6		
III	{	— 8 205	= — 4 0500	x	+ 2 9320	y	+	5	}	— 25 325 = — 13 9580 x + 4 2890 y + 15
		— 17 120	= — 9 9080	x	+ 1 3570	y	+	10		
IV	{	— 2 427	= — 2 7468	x	— 1 2066	y	+	3	}	+ 0 464 = — 7 6074 x — 11 9579 y + 15
		+ 2 786	= — 3 8311	x	— 5 8583	y	+	7		
		+ 0 105	= — 1 0295	x	— 4 8930	y	+	5		
I + II + III + IV			— 51 018	= — 3 4182	x	— 5 1315	y	+	60	
(I + II) — (III + IV)			— 1 296	= + 39 7126	x	+ 10 2063	y			
(I + IV) — (II + III)			+ 13 016	= + 9 7718	x	— 36 7653	y			

$$x = + 0 055 \quad y = - 0 339 \quad = - 0 876$$

Measures of the Sun's Apparent Distance from the Nautical Almanac together with the corresponding errors in the Eliptic Parabolic

	M D y	Err i A R	N _{Ob} f	Err i N P D	N _{Ob} f	Err in E lpt P D
	J u r y —	—	—	+ 0 705	22	—
	F b r u a r y —	—	—	+ 1 944	27	—
	M a r c h 22	+ 0 040	2	+ 1 991	28	+ 2 064
	A p r i l 17	+ 0 094	7	+ 2 312	29	+ 2 657
	M a y 16	— 0 205	16	+ 0 765	24	+ 0 036
	J u n e 18	+ 0 012	8	+ 0 717	16	+ 0 721
	J u l y 16	— 0 041	7	+ 0 132	15	+ 0 226
	A g u s t 8	+ 0 170	1	— 1 662	14	— 2 310
	S e p t e m b e r 21	— 0 290	2	— 0 489	14	+ 1 283
	O c t o b e r 16	— 0 089	12	— 0 052	16	+ 0 443
	N o v e m b e r 20	— 0 050	4	— 0 480	14	— 0 307
	D e c e m b e r 17	— 0 179	15	— 0 508	20	— 0 413

Assuming the error in the Eliptic Parabolic distance to be represented by the formula $x \times \cos S$ long t de + $y \times S$ S s long t de + w g t

(I)	J u r y	—	—	=	—	—	—	—	—	—	—	—
	F b r u a r y	—	—	=	—	—	—	—	—	—	—	—
	M a r c h	22	+ 2 064	=	+ 0 9998	x	+ 0 0215	y	+	w	=	2
(II)	A p r i l	17	+ 2 657	=	+ 0 8924	x	+ 0 4511	y	+	w	=	6
	M a y	16	+ 0 036	=	+ 0 5745	x	+ 0 8185	y	+	w	=	10
	J u n e	18	+ 0 721	=	+ 0 0602	x	+ 0 9982	y	+	w	=	5
(III)	J u l y	16	+ 0 226	=	— 0 3947	x	+ 0 9188	y	+	w	=	5
	A g u s t	8	— 2 310	=	— 0 7102	x	+ 0 7040	y	+	w	=	1
	S e p t e m b e r	21	+ 1 283	=	— 0 9993	x	+ 0 0378	y	+	w	=	2
(IV)	O c t o b e r	16	+ 0 443	=	— 0 9239	x	— 0 3827	y	+	w	=	7
	N o v e m b e r	20	— 0 307	=	— 0 5363	x	— 0 8440	y	+	w	=	3
	D e c e m b e r	17	— 0 413	=	— 0 0872	x	— 0 9962	y	+	w	=	9

Altering the weights (w) so as to render the numbers in each quart the same and carrying out the multiplication

$$\begin{aligned}
 \text{I } \left\{ \begin{array}{l} + 24768 = + 119976 x + 02580 y + 12 \\ + 10628 = + 35696 x + 18044 y + 4 \\ + 0180 = + 28725 x + 40925 y + 5 \\ + 2163 = + 01806 x + 29946 y + 3 \end{array} \right\} &+ 24768 = + 119976 x + 02580 y + 12 z \\
 \text{II } \left\{ \begin{array}{l} + 1582 = - 27629 x + 64316 y + 7 \\ - 4620 = - 14204 x + 14080 y + 2 \\ + 3849 = - 29979 x + 01134 y + 3 \end{array} \right\} &+ 0811 = - 71812 x + 79530 y + 12 \\
 \text{III } \left\{ \begin{array}{l} + 1772 = - 36956 x - 15308 y + 4 \\ - 0614 = - 10726 x - 16880 y + 2 \\ - 2478 = - 05232 x - 59772 y + 6 \end{array} \right\} &- 1320 = - 52914 x - 91960 y + 12 \\
 \text{IV } \left\{ \begin{array}{l} + 37230 = + 61477 x + 79065 y + 48 \\ + 38248 = + 310929 x + 103925 y \\ + 9666 = + 72647 x - 257825 y \end{array} \right\} & \\
 \text{I} + \text{II} + \text{III} + \text{IV} &+ 37230 = + 61477 x + 79065 y + 48 \\
 (\text{I} + \text{II}) - (\text{III} + \text{IV}) &+ 38248 = + 310929 x + 103925 y \\
 (\text{I} + \text{IV}) - (\text{II} + \text{III}) &+ 9666 = + 72647 x - 257825 y
 \end{aligned}$$

$$x = + 1238 \quad y = - 0025 \quad = + 0621$$

Me fth S A R d N P D s terpl t d fr mth N t l Alman c t g th r w th the corre p d g rrors
th El p t c P l D ta

	M an D y	Err i A R	N _{Ob} f	Err in N P D	N _{Ob} f	Err in Ellipt P D
J y	18	— 0 094	10	+ 1 249	18	+ 0 964
F b y	14	— 0 034	17	+ 2 002	26	+ 1 721
M l	15	+ 0 002	6	+ 1 474	25	+ 1 366
Ap l	20	+ 0 090	5	+ 3 042	25	+ 3 312
M y	17	— 0 221	11	+ 2 256	24	+ 1 441
J	14	+ 0 065	10	+ 1 663	24	+ 1 711
J ly	—	—	—	+ 0 680	17	—
A b t	—	—	—	+ 0 197	18	—
S e p t e m b e r	16	— 0 065	2	+ 1 014	18	+ 1 317
O c t b	18	+ 0 114	5	+ 0 043	18	— 0 581
N o v e m b e r	18	+ 0 072	11	+ 0 467	19	+ 0 208
D e c e m b e r	21	+ 0 046	11	+ 0 002	18	— 0 003

As m g the e o El p t c P l D stanc to be rep es nted by the f m l $x \times C s S n s l g t u d e + y \times S n S u n s$
l g t d e + z v g e t

(I)	J y	18	+ 0 964	= + 0 4633	x	— 0 8862	y	+	w	= 6
	F b y	14	+ 1 721	= + 0 8190	x	— 0 5738	y	+	w	= 10
	M r h	15	+ 1 366	= + 0 9946	x	— 0 1034	y	+	w	= 5
(II)	A l l	20	+ 3 312	= + 0 8701	x	+ 0 4929	y	+	w	= 3
	M y	17	+ 1 441	= + 0 5640	x	+ 0 8258	y	+	w	= 7
	J e	14	+ 1 711	= + 0 1305	x	+ 0 9114	y	+	w	= 8
(III)	J ly	—	—	= —	—	—	—	—	—	—
	A b t	—	—	= —	—	—	—	—	—	—
	S e p t e m b e r	16	+ 1 317	= — 0 9919	x	+ 0 1268	y	+	w	= 2
(IV)	October	18	— 0 581	= — 0 9118	x	— 0 4107	y	+	w	= 4
	No v e m b e r	18	+ 0 208	= — 0 5690	x	— 0 8223	y	+	w	= 7
	D e c e m b e r	21	— 0 003	= — 0 0206	x	— 0 9998	y	+	w	= 7

Altering the weights (w) so as to render the numbers n ach q arte th s m d carrying out the m lt p l cati

$$\begin{aligned}
 \text{I} \quad & \left\{ \begin{array}{l} + 5784 = + 27798 - 53172 y + 6 \\ + 13768 = + 65520 x - 45904 y + 8 \\ + 5464 = + 39784 x - 04136 y + 4 \end{array} \right\} + 25016 = + 133102 x - 103212 y + 18 \\
 \text{II} \quad & \left\{ \begin{array}{l} + 9936 = + 26103 x + 14787 y + 3 \\ + 10087 = + 39480 x + 57806 y + 7 \\ + 13688 = + 10440 x + 72912 y + 8 \end{array} \right\} + 33711 = + 76023 x + 145505 y + 18 \\
 \text{III} \quad & \left\{ \begin{array}{l} - \\ + 23706 = - 178542 x + 22824 y + 18 \end{array} \right\} + 23706 = - 178542 x + 22824 y + 18 \\
 \text{IV} \quad & \left\{ \begin{array}{l} - 2324 = - 36472 x - 16428 y + 4 \\ + 1456 = - 39830 x - 57561 y + 7 \\ - 0021 = - 01442 x - 69986 y + 7 \end{array} \right\} - 0889 = - 77744 - 143975 y + 18 \\
 \\
 \text{I} + \text{II} + \text{III} + \text{IV} & + 81544 = - 47161 x - 78858 y + 72 \\
 (\text{I} + \text{II}) - (\text{III} + \text{IV}) & + 35910 = + 465411 + 163444 y \\
 (\text{I} + \text{IV}) - (\text{II} + \text{III}) & - 33290 = + 157877 - 415516 y \\
 \\
 x = + 0.433 & \quad y = + 0.965 \quad z = + 1.266
 \end{aligned}$$

Mean errors of the Sun A R d N P D as determined from the Nautical Almanac taking the with the corresponding errors in the Ecliptic P l D ta

	Mean D y	E in A R	N _{Ob} f	Err i N P D	N _{Ob} f	E i Eclipt P D
J u y	16	+ 0012	23	+ 0483	22	+ 0505
F b r u a r y	17	+ 0046	20	+ 2025	24	+ 2132
M a r c h	16	+ 0057	24	+ 1639	30	+ 1844
A p r i l	18	+ 0083	18	+ 1839	29	+ 2154
M a y	16	+ 0010	16	+ 0770	24	+ 0781
J u n e	15	+ 0113	16	+ 0518	21	+ 0588
J u l y	15	+ 0055	10	- 0504	17	- 0623
A u g u s t	11	- 0036	8	+ 0903	22	+ 1019
S e p t e m b e r	18	+ 0181	20	+ 0421	24	- 0690
O c t o b e r	21	+ 0155	15	+ 0372	18	- 0469
N o v e m b e r	19	- 0033	18	+ 0505	22	+ 0599
D e c e m b e r	8	+ 0164	7	+ 0108	12	- 0122

Assuming the error in Ecliptic P l R distance to be represented by the formula $x \times \cos \text{Sun's longitude} + y \times \sin \text{Sun's longitude} + z$ we get

$$\begin{aligned}
 \text{(I)} \quad & \left\{ \begin{array}{l} \text{J u y} \quad 16 \quad + \quad 0505 = + \quad 04271 \quad x - \quad 09042 \quad y + \quad z \\ \text{F b r u a r y} \quad 17 \quad + \quad 2132 = + \quad 08456 \quad x - \quad 05339 \quad y + \quad z \\ \text{M a r c h} \quad 16 \quad + \quad 1844 = + \quad 09973 \quad x - \quad 00735 \quad y + \quad z \end{array} \right. \quad \begin{array}{l} w = 11 \\ w = 11 \\ w = 13 \end{array} \\
 \text{(II)} \quad & \left\{ \begin{array}{l} \text{A p r i l} \quad 18 \quad + \quad 2154 = + \quad 08805 \quad x + \quad 04741 \quad y + \quad z \\ \text{M a y} \quad 16 \quad + \quad 0781 = + \quad 05676 \quad x + \quad 08233 \quad y + \quad z \\ \text{J u n e} \quad 15 \quad + \quad 0588 = + \quad 01028 \quad x + \quad 09947 \quad y + \quad z \end{array} \right. \quad \begin{array}{l} w = 11 \\ w = 10 \\ w = 8 \end{array} \\
 \text{(III)} \quad & \left\{ \begin{array}{l} \text{J u l y} \quad 15 \quad - \quad 0623 = - \quad 03872 \quad x + \quad 09220 \quad y + \quad z \\ \text{A u g u s t} \quad 11 \quad + \quad 1019 = - \quad 07501 \quad x + \quad 06613 \quad y + \quad z \\ \text{S e p t e m b e r} \quad 18 \quad - \quad 0690 = - \quad 09968 \quad x + \quad 00802 \quad y + \quad z \end{array} \right. \quad \begin{array}{l} w = 6 \\ w = 6 \\ w = 11 \end{array} \\
 \text{(IV)} \quad & \left\{ \begin{array}{l} \text{O c t o b e r} \quad 21 \quad - \quad 0469 = - \quad 08831 \quad x - \quad 04692 \quad y + \quad z \\ \text{N o v e m b e r} \quad 19 \quad + \quad 0599 = - \quad 05434 \quad x - \quad 08390 \quad y + \quad z \\ \text{D e c e m b e r} \quad 8 \quad - \quad 0122 = - \quad 09363 \quad x - \quad 09717 \quad y + \quad z \end{array} \right. \quad \begin{array}{l} w = 8 \\ w = 10 \\ w = 4 \end{array}
 \end{aligned}$$

Altogether the weights () so as to render the members equal to the same determining the multiplication

$$\begin{aligned}
 \text{I} \quad & \left\{ \begin{array}{l} + \quad 3535 = + \quad 29897 \quad x - \quad 63294 \quad y + \quad 7 \\ + \quad 17066 = + \quad 67648 \quad x - \quad 42712 \quad y + \quad 8 \\ + \quad 14752 = + \quad 79784 \quad x - \quad 05880 \quad y + \quad 8 \end{array} \right\} + 35343 = + 177329 \quad x - 111886 \quad y + 23 \\
 \text{II} \quad & \left\{ \begin{array}{l} + \quad 17232 = + \quad 70440 \quad x + \quad 37924 \quad y + \quad 8 \\ + \quad 6248 = + \quad 45408 \quad x + \quad 65864 \quad y + \quad 8 \\ + \quad 4116 = + \quad 07196 \quad x + \quad 69629 \quad y + \quad 7 \end{array} \right\} + 27596 = + 123044 \quad x + 173421 \quad y + 23 \\
 \text{III} \quad & \left\{ \begin{array}{l} - \quad 3738 = - \quad 23232 \quad x + \quad 55320 \quad y + \quad 6 \\ + \quad 6114 = - \quad 45006 \quad x + \quad 39678 \quad y + \quad 6 \\ - \quad 7590 = - \quad 109648 \quad x + \quad 08822 \quad y + \quad 11 \end{array} \right\} - 5214 = - 177886 \quad x + 103820 \quad y + 23 \\
 \text{IV} \quad & \left\{ \begin{array}{l} - \quad 3762 = - \quad 70448 \quad x - \quad 37536 \quad y + \quad 8 \\ + \quad 5990 = - \quad 54340 \quad x - \quad 83950 \quad y + \quad 10 \\ - \quad 0610 = - \quad 11815 \quad x - \quad 48585 \quad y + \quad 5 \end{array} \right\} + 1628 = - 136603 \quad x - 170071 \quad y + 23 \\
 \\
 \text{I} + \text{II} + \text{III} + \text{IV} & \quad + \quad 59353 = - \quad 14116 \quad x - \quad 04716 \quad y + \quad 92 \\
 (\text{I} + \text{II}) - (\text{III} + \text{IV}) & \quad + \quad 66525 = + \quad 614862 \quad x + \quad 127786 \quad y \\
 (\text{I} + \text{IV}) - (\text{II} + \text{III}) & \quad + \quad 14589 = + \quad 95568 \quad x - \quad 559198 \quad y \\
 \\
 x & = + 1096 \quad y = - 0074 \quad z = + 0662
 \end{aligned}$$

M is the S n s A R and N P D as t r p l ted f om the N ut l Alman t gether w th the rresp d ger
th E l i t P l r Distan

	M a n D y	E l R	N O l f	Er i N P D	N O b f	Err E l l p P D
J y	19	— 0 038	23	— 0 156	24	— 0 262
I b y	15	+ 0 182	23	+ 0 620	26	+ 1 489
Mar l	16	+ 0 339	25	+ 0 323	25	+ 2 313
Apr l	16	+ 0 172	31	+ 0 553	30	+ 1 437
M y	19	+ 0 004	21	+ 0 154	26	+ 0 154
J	13	+ 0 308	17	+ 0 030	22	+ 0 289
J ly	15	+ 0 170	18	— 0 652	26	— 1 030
A g t	16	+ 0 246	14	— 1 000	23	— 2 118
S p t mber	18	+ 0 224	17	— 0 808	24	— 2 072
O t l	17	+ 0 133	18	— 1 110	19	— 1 7 8
N b	15	— 0 059	20	— 0 035	19	+ 0 178
D c ml	15	— 0 033	10	— 2 477	11	— 2 448

Assumi g the rro Ecl ptic Polai Di tanc t be rep ese ted by the formula, $x \times C s$ Sun s l ng t de + $y \times S$ Su
l g tud + we get

(I)	J nuary	19	— 0 262	= + 0 4866	x — 0 8736	y +	w = 12
	Γ bru y	15	+ 1 489	= + 0 8361	x — 0 5485	y +	w = 13
	M r l	16	+ 2 313	= + 0 9970	x — 0 0776	y +	w = 13
(II)	Apr l	16	+ 1 437	= + 0 8979	x + 0 4402	y +	w = 15
	M y	19	+ 0 154	= + 0 5262	x + 0 8503	y +	w = 11
	J ie	13	+ 0 289	= + 0 1386	x + 0 9903	y +	w = 10
(III)	J ly	15	— 1 030	= — 0 3835	x + 0 9235	y +	w = 10
	A b t	16	— 2 118	= — 0 8004	x + 0 5995	y +	w = 9
	S p t mber	18	— 2 072	= — 0 9964	x + 0 0843	y +	w = 10
(IV)	O ctol	17	— 1 7 8	= — 0 9153	x — 0 4028	y +	w = 9
	Nov mb	15	+ 0 178	= — 0 6046	x — 0 7965	y +	w = 10
	D c e b r	15	— 2 448	= — 0 1178	x — 0 9930	y +	w = 5

Alter ng the we g l ts (e) so as to render the numbers n ea h quarter the s me nd ca y ng t th multipl cat o

I	{	— 2 60	= + 4 8660	x — 8 7360	y + 10	} + 39 202 = + 25 0301 x — 1 6231 y + 32
	{	+ 16 379	= + 9 1971	x — 6 033	y + 11	
	{	+ 2 443	= + 10 9670	x — 0 8 36	y + 11	
II	{	+ 18 681	= + 11 6727	x + 5 7226	y + 13	} + 22 822 = + 18 1821 x + 23 1383 y + 32
	{	+ 1 40	= + 2620	x + 8 5030	y + 10	
	{	+ 2 601	= + 1 2474	x + 8 9127	y + 9	
III	{	— 11 330	= — 4 2185	x + 10 1585	y + 11	} — 55 302 = — 23 1829 + 17 0808 y + 32
	{	— 21 180	= — 8 0040	x + 5 9950	y + 10	
	{	— 22 792	= — 10 9604	x + 0 9273	y + 11	
IV	{	— 22 8 4	= — 11 8989	x — 5 2364	y + 13	} — 39 856 = — 20 4655 x — 21 5489 y + 32
	{	— 2 314	= — 7 8 98	x — 10 3545	y + 13	
	{	— 11 688	= — 0 7068	x — 5 9580	y + 6	
I + II + III + IV				— 33 134	= — 0 4362 x + 3 0471 y + 128	
(I + II) — (III + IV)				+ 157 182	= + 86 8606 x + 11 9833 y	
(I + IV) — (II + III)				+ 31 826	= + 9 5654 x — 77 3911 y	
x				= + 1 83	y = — 0 184	z = — 0 248

M ofth S A R dN P D a t p l t d f mth N t c l Alm t g th w l th c s p o d g e r s
 t l E l p t P l D t

	M an D y	Err i A R	N _{Ob} f	Err i N P D	N _{Ob} f	Err i E l l p P D
J	y 17	+ 0 120	20	— 0 885	24	— 0 544
F b	y 15	— 0 063	22	+ 0 277	22	— 0 052
M	l 16	+ 0 009	28	+ 0 208	28	+ 0 244
A p l	15	+ 0 046	21	+ 0 898	30	+ 1 085
M y	15	+ 0 176	21	+ 0 170	25	+ 0 782
J	14	+ 0 300	11	— 0 472	23	— 0 240
J l y	15	+ 0 354	10	— 0 611	19	— 1 403
A	t 18	+ 0 150	9	— 1 516	22	— 2 163
S p t m b e	17	— 0 062	8	— 2 059	16	— 1 524
O t b	18	+ 0 014	14	— 0 952	17	— 0 961
N	m b e 9	— 0 022	8	+ 0 800	10	+ 0 8 6
D	m b 15	+ 0 030	6	+ 1 743	3	+ 1 717

Assum g the erro E l p t i c P l a r Distanc to be r prese t d by the f l a x × Cos S a long t d + J × S n S u n s
 l o g t d e + z we get

(I)	J y 17	— 0 544	= + 0 4514	x — 0 8923	y +	w = 11
	F b ry 15	— 0 052	= + 0 8315	x — 0 556	y +	w = 11
	Mar h 16	+ 0 244	= + 0 9967	x — 0 0817	y +	w = 14
(II)	A p l 15	+ 1 085	= + 0 9072	x + 0 4208	y +	w = 12
	M y 15	+ 0 782	= + 0 5878	x + 0 8090	y +	w = 11
	J n 14	— 0 240	= + 0 1262	x + 0 9920	y +	w = 7
(III)	J l y 15	— 1 403	= — 0 3797	x + 0 9251	y +	w = 7
	A g u s t 18	— 2 163	= — 0 8178	x + 0 5755	y +	w = 6
	S p t e m b e 17	— 1 524	= — 0 9944	x + 0 1054	y +	w = 5
(IV)	O t b 18	— 0 961	= — 0 9100	x — 0 4147	y +	w = 8
	N v m b e 9	+ 0 856	= — 0 6881	x — 0 7256	y +	w = 4
	D e m b e r 15	+ 1 717	= — 0 1224	x — 0 9925	y +	w = 2

Alte r g the we ghts (w) so as t r e n d e r t h e m b e r s e a c h q u a r t e t h e s a m d e r y g o t t h e m u l t p l t

I	{	—	4 352	= +	3 6112	<i>x</i> —	7 1384	<i>y</i> +	8	{	— 2 572 = + 19 233 <i>x</i> — 12 3185 <i>y</i> + 2
		—	0 416	= +	6 6520	<i>x</i> —	4 4448	<i>y</i> +	8		
		+	2 196	= +	8 9703	<i>x</i> —	0 7353	<i>y</i> +	9		
II	{	+	10 850	= +	9 0720	<i>x</i> +	4 2080	<i>y</i> +	10	{	+ 16 448 = + 15 1194 <i>x</i> + 1 4410 <i>y</i> + 25
		+	7 038	= +	5 2902	<i>x</i> +	7 2810	<i>y</i> +	9		
		—	1 440	= +	0 7572	<i>x</i> +	9 20	<i>y</i> +	6		
III	{	—	12 627	= —	3 4173	<i>x</i> +	8 3259	<i>y</i> +	9	{	— 42 123 = — 17 9149 <i>x</i> + 13 7731 <i>y</i> + 25
		—	17 304	= —	6 5424	<i>x</i> +	4 6040	<i>y</i> +	8		
		—	12 192	= —	7 9552	<i>x</i> +	0 8432	<i>y</i> +	8		
IV	{	—	13 454	= —	12 7400	<i>x</i> —	5 8058	<i>y</i> +	14	{	— 0 594 = — 18 0463 <i>x</i> — 14 8550 <i>y</i> + 2
		+	5 992	= —	4 8167	<i>x</i> —	5 0792	<i>y</i> +	7		
		+	6 868	= —	0 4896	<i>x</i> —	3 9700	<i>y</i> +	4		
I + II + III + IV — 28 841 = — 1 6083 <i>x</i> + 4 0406 <i>y</i> + 100											
(I + II) — (III + IV) + 56 593 = + 70 3141 <i>x</i> + 6 2044 <i>y</i>											
(I + IV) — (II + III) + 22 509 = + 3 9827 <i>x</i> — 58 3876 <i>y</i>											

$$x = + 0 834 \quad y = - 0 329 \quad z = - 0 262$$

M f l s A R d N P D as nte p lat d f om th N ut l Almanac t g th r w th the orresp d g err
th l l l l l D t

	M D y	E A R	N _{Ob} f	Err in N P D	N _{Ob} f	E Eclipt P D
	J y 15	— 0 210	20	+ 0 352	20	— 0 174
	F l y 16	— 0 037	12	+ 1 470	15	+ 1 197
	M h 16	+ 0 015	20	+ 1 349	24	+ 1 3 9
	A l l 16	+ 0 062	18	+ 1 458	20	+ 1 692
	M y 10	+ 0 174	16	+ 0 252	20	+ 0 842
	J 11	+ 0 302	6	+ 0 677	14	+ 0 998
	July 16	+ 0 330	8	— 0 275	15	— 1 017
	A g t 17	— 0 110	6	— 1 003	15	— 0 418
	S e t m b l 14	+ 0 212	4	— 0 350	13	— 1 570
	O t b 15	— 0 009	8	+ 1 032	17	+ 1 006
	N v e b e 13	— 0 040	4	+ 1 963	11	+ 2 045
	D e c l 17	+ 0 104	5	+ 1 965	6	+ 1 905

As h t l ei or n Eclipt c P l r D stance to be rep esented by th f rmul $w \times \cos S$ sl g t de + $y \times S$ S n s
l b t le + z ve get

(I)	J y 15	— 0 174	= + 0 4157	w — 0 9095	y +	w = 10
	F b uary 16	+ 1 197	= + 0 8388	w — 0 5444	y +	w = 6
	M a c h 16	+ 1 329	= + 0 9963	w — 0 0857	y +	w = 11
(II)	A l l 16	+ 1 692	= + 0 9016	w + 0 4326	y +	w = 9
	M a y 16	+ 0 842	= + 0 5774	w + 0 8165	y +	w = 9
	J u n e 11	+ 0 998	= + 0 1794	w + 0 9838	y +	w = 4
(III)	J l y 16	— 1 017	= — 0 3915	w + 0 9202	y +	w = 5
	A g u s t 17	— 0 418	= — 0 8059	w + 0 5920	y +	w = 4
	S e p t e m b e r 14	— 1 570	= — 0 9817	w + 0 1599	y +	w = 3
(IV)	O c t o b e r 1	+ 1 006	= — 0 9317	w — 0 3632	y +	w = 5
	N o v e m b e r 13	+ 2 045	= — 0 6388	w — 0 7694	y +	w = 3
	D e c e m b e r 17	+ 1 905	= — 0 0912	w — 0 9958	y +	w = 3

Altering the weights (w) so as to render the numbers each q after the same and carrying out the mult pl c tio

I	{	— 1 218	= + 2 9099	w — 0 366	y + 7	} + 14 202 = + 14 2355 w — 9 2297 y + 19
		4 788	= + 3 3552	w — 2 1776	y + 4	
		10 632	= + 7 9704	w — 0 6856	y + 8	
II	{	+ 13 36	= + 7 2128	w + 3 4608	y + 8	} + 23 266 = + 12 3702 w + 12 9442 y + 19
		6 736	= + 4 6192	w + 6 5320	y + 8	
		+ 2 991	= + 0 382	w + 2 9514	y + 3	
III	{	— 7 119	= — 2 740	w + 6 4414	y + 7	} — 19 047 = — 13 4985 w + 10 9528 y + 19
		— 2 508	= — 4 8354	w + 3 5520	y + 6	
		— 9 420	= — 9 226	w + 0 9594	y + 6	
IV	{	+ 9 054	= — 8 38 3	w — 3 2688	y + 9	} + 28 804 = — 12 0363 w — 12 0948 y + 19
		+ 10 22	= — 3 1940	w — 3 8470	y + 5	
		+ 9 2	= — 0 4560	w — 4 9790	y + 5	
I + II + III + IV				+ 47 225	= + 1 0719 w + 2 5725 y + 76	
(I + II) — (III + IV)				+ 27 711	= + 52 1395 w + 4 8565 y	
(I + IV) — (II + III)				+ 38 787	= + 3 3285 w — 45 2215 y	

$$w = + 0 607 \quad y = - 0 813 \quad = + 0 640$$

Correction to be applied to the Madras Determinations of Right Ascension Vols I—II by reason of a wrong assumption of the place of the Equinox

			J		E of Eq I
1831	— 1 33	— 0 81	— 1 205	— 0 223	
1832	— 0 44	+ 0 92	+ 0 730	— 0 074	
1833	— 0 84	— 0 93	— 0 410	— 0 174	
1834	Th Tan t I	t u n e n t w a s u n d e r	p a r		
1835	— 1 84	— 0 512	— 0 220	— 0 297	
1836	— 0 693	— 0 291	+ 0 212	— 0 115	
1837	— 0 606	+ 0 191	— 0 240	— 0 101	
1838	— 1 428	— 0 052	— 0 051	— 0 238	
1839	— 1 483	— 0 042	+ 0 450	— 0 247	
1840	— 1 848	— 0 051	+ 0 384	— 0 308	
1841	+ 0 006	— 0 339	— 0 8 6	+ 0 009	
1842	+ 1 238	— 0 02	+ 0 621	+ 0 206	
1843	+ 0 433	+ 0 905	+ 1 266	+ 0 0 2	
1844	+ 1 096	— 0 074	+ 0 662	+ 0 183	
1845	+ 1 83	— 0 184	— 0 248	+ 0 306	
1846	+ 0 834	— 0 29	— 0 262	+ 0 130	
1847	+ 0 007	— 0 813	+ 0 610	+ 0 101	

The results of the observations of the Equinox at Pondicherry from 1831 to 1847 are given in the following table. The results are given in the form of the correction to be applied to the Madras Determinations of Right Ascension Vols I—II by reason of a wrong assumption of the place of the Equinox.

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Correction to be applied to the Madras Determinations of Right Ascension Vols I—II by reason of a wrong assumption of the place of the Equinox

1831	— 0 223
1832	— 0 074
1833	— 0 174
1834	Th Tan t I
1835	— 0 297
1836	— 0 115
1837	— 0 101
1838	— 0 238
1839	— 0 247
1840	— 0 308
1841	+ 0 009

Mean

— 0 177

(A)

on b is r d y t f t y te but th t t l ults f m d f f t b diff t W t l u t a i t y
 l a n g i n g i m p t a t u l t I p p f t l p e t t d t l t l p l f t l f x d S t g l l l I q
 t o n - 0 1 0 t f t h d p l a f t h E q c t l p t l g d t l P l t j O b t - n
 f m r w l l t h p t l m - t l t l o b t n p t t l t f t l j 1 8 1 l k w q e r
 t t h t f - 0 1 0 b t t h t f l l t l b r t u s d b q t t t l t d t t l E q t l p t l b g l i l j
 m d

A g d t l v a l u e s f j t l O b l q t y u e d t l a l c u l t n t h A l m n h m m d u l t l d u g t l p e l
 1 8 3 5 - 1 8 4 7 w n y t n e t k t h m (- 1 ° 0 ') w l n c e t p p r t h t t l O b l q u t y m p l y d t l N u t l A l m
 l u l t a n l u l d b d i m m l l 0 1 0 ' F u l l y f m w l n t h a t t h b t t h N t l n S l t t M l l
 b t O b l q u t y (O + 0 9 1) a d t a t t h o m d e a t t h S t l n S l t e x l b t a n O b l q u t y (O - 0 9 1) O p r s e t t l t
 O b l q u t y

OBSERVATIONS OF THE FIXED STARS

— () —

IN vol VI of the Madras Astronomical Results is given the places of above eleven thousand Stars which had been observed at Madras during the period 1830 1840 together with the re observed places of several of these during the years 1841 1842 all being reduced to January 1st 1835 or about the middle period of observation Satisfied that in point of *quantity* the Madras Catalogue contained as much as for the present could be considered useful I have during the last three years principally confined myself to the observation of a small Catalogue only having in view to satisfy the more rigid conditions of *quality* than could be expected from the necessarily limited number of observations of the larger Catalogue

In the early volumes of the Madras Results I had estimated the mean error of a single observation as far as concerns the observer—under ordinary circumstances to amount to 0.07 seconds of time and the error of a single observation of Declination was estimated at about 0.7—these estimations having been confirmed by the experience of Astronomers generally it becomes a question of deep interest as to what causes may be attributed the large discrepancies which are often met with between catalogues of different but not very distant epochs emanating from the same Observatory and observed with the same Instruments—A mere glance at page XI (preface to the Nautical Almanac 1845) renders the suspicion strong—that in the reduction of the mean places from observation at one epoch to that of another something more than Annual Precession and Annual Proper Motion must be taken into account in several instances the total neglect of the proper motion will to some extent account for want of accordance of results whereas in others nothing short of a variable amount of proper motion can reconcile discordances—With this by way of motive I at once determined on the continued and careful observations of the Stars forming the Nautical Almanac Catalogue or rather such of them (97 in number) as were visible at Madras

On comparing the Madras Catalogue (Vol VI) with the recently published Greenwich Catalogue for 1840—differences were met with much too large to be charged upon either the Instruments or Observers hence the necessity that the places of these Stars should be re examined and they have accordingly—to the extent of three or four observations of each—again been re-observed—In addition to these I have re observed all Stars in which an annual Proper Motion exceeding a quarter of a second of space has been noticed by Piazzi or has resulted from a comparison of Piazzi with the Madras Catalogue moreover the places of several Stars in the Brisbane Catalogue for 1825 reduced to 1835 (brought forward by ten years *Precession only*—which differed above five seconds from the Madras

(2)

Catalogue—these too have been re observed in order to settle the question as to—whether these ascertained differences arose from error in the B Catalogue or if they were the result of accumulated Proper Motion—these several motives have influenced me in the choice of a plan for observing during the period embraced by the present Catalogues viz 1843-1847 the observations may not improperly be separated into two classes the first being the permanent observations or those of the Nautical Almanac Stars and the others the Subsidiary observations—thus

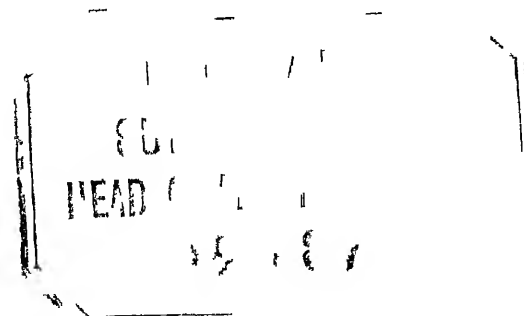
PERMANENT OBSERVATIONS

The 97 Stars forming the Permanent Catalogue have been arranged in order of their Declination as being thereby better suited for comparison—the figures in the second column express the number of observations in the years 1843 1844 1845 1846 and 1847 respectively and opposite to these in the third column are the corresponding mean results—in which it must be noted that *the Right Ascensions reckon from the equinox assumed in the Nautical Almanac Catalogues*

On comparing the Right Ascensions of Stars for the years 1843 1847 as brought up from the Catalogue given in vol VI with the places given in the Nautical Almanacs for those years it appears that the equinoctial point assumed in the one differs from that referred to in the other by 0 10 or the Right Ascensions from Vol VI—0 10 represents the Nautical Almanac places or to render our present Catalogue comparable with volume VI this reduction (0 10) must be employed and hence the places set down in the fourth column (viz Vol VI—0 10)

The fifth column of each page contains the places from the Greenwich Catalogue of 1439 Stars for 1840 which have been brought forward to 1845 by supplying five times the amount of the Precessions there given this is true at least as far as and including Columbae for the Stars situated to the South of this which are not visible at Greenwich the N A places have been filled in

The next following columns containing the differences of each Catalogue from Greenwich and of the one from the other explain their own meaning



MEAN PLACES

OF

NINETY SEVEN PRINCIPAL FIXED STARS,

FROM

OBSERVATIONS MADE AT THE MADRAS OBSERVATORY

IN THE YEARS 1843—1847

REDUCED TO JANUARY 1 1845

AND

COMPARED WITH THE RESULTS OF FORMER YEARS &c

MEAN PLACES OF NINETY SEVEN PRINCIPAL FIXED STARS

NAMES	N O	MEAN RIGHT ASCENSION J N U A Y				DIFFERENCES		
		O	MEAN	V VI —0 10 II	GRN NW (840) III	III—I	III—II	I—II
		843— 47						
		h m s	s	s	s	s	s	s
λ Ursæ Minoris	13	20 17 23 41						
	9	25 65						
	15	22 99	23 01	22 18	23 64	+ 0 63	+ 1 46	+ 0 83
	16	22 03						
	22	20 96						
α Ursæ Minoris	—	1 3 —						
	49	35 62						
	76	34 77	34 63	33 57	34 74	+ 0 11	+ 1 17	+ 1 06
	61	35 86						
	33	32 27						
51 Cephei	23	6 25 62 51						
	53	59 35						
	53	60 33	60 41	59 62	59 89	— 0 52	+ 0 27	+ 0 79
	43	60 18						
	32	59 67						
δ Ursæ Minoris	4	18 22 21 53						
	11	19 58						
	13	20 62	20 25	20 34	20 04	— 0 21	— 0 30	— 0 09
	26	19 21						
	37	20 32						
Ursæ Minoris	2	17 2 4 70						
	14	3 30						
	6	4 23	3 81	2 91	3 62	— 0 19	+ 0 71	+ 0 90
	5	3 45						
	3	3 35						
ζ Ursæ Minoris	5	15 49 44 09						
	9	43 65						
	11	43 58	43 60	43 12	43 40	— 0 20	+ 0 28	+ 0 48
	3	43 28						
	3	43 39						
γ Cephei	6	23 33 3 06						
	22	2 13						
	9	1 75	2 18	1 90	2 14	— 0 04	+ 0 24	+ 0 28
	10	2 03						
	7	1 94						
β Ursæ Minoris	11	14 51 13 75						
	24	13 33						
	7	13 47	13 53	12 51	13 47	— 0 06	+ 0 96	+ 1 02
	14	13 33						
	11	13 75						
β Cephei	12	21 26 38 26						
	32	38 30						
	23	38 33	38 31	38 10	38 25	— 0 06	+ 0 15	+ 0 21
	21	38 17						
	12	38 48						
α Ursæ Majoris	46	10 54 6 77						
	74	6 78						
	68	6 85	6 78	6 54	6 87	+ 0 09	+ 0 33	+ 0 24
	70	6 65						
	52	6 87						

NAMES	N Obs	ME N DECLINATION ANU BY 4					D IFFERENCES		
		0	M	V VI	G W	(0)	III-I	III-II	I-II
		184 -1 47	I	II	III				
λ Ursæ Minoris	14	+ 88 50 44 34							
	13	42 14							
	16	42 76	42 99	40 93	42 77		- 0 22	+ 1 84	+ 2 06
	7	42 07							
	21	43 66							
Ursæ Minoris	33	+ 88 28 59 14							
	37	58 71							
	40	58 76	58 67	58 90	58 79		+ 0 12	- 0 11	- 0 23
	62	58 46							
	31	58 29							
51 Cephei	23	+ 87 15 34 97							
	51	33 64							
	54	33 73	33 68	34 68	33 89		+ 0 21	- 0 79	- 1 00
	42	33 56							
	36	32 52							
δ Ursæ Minoris	4	+ 86 35 40 67							
	10	39 43							
	12	40 36	39 87	41 23	40 64		+ 0 77	- 0 59	- 1 36
	4	39 28							
	9	39 59							
Ursæ Minoris	3	+ 82 16 57 64							
	13	58 49							
	6	57 45	57 42	56 06	57 48		+ 0 06	+ 1 42	+ 1 36
	5	56 35							
	3	57 15							
ε Ursæ Minoris	6	+ 78 16 5 41							
	9	5 76							
	10	6 86	5 95	5 45	6 17		+ 0 22	+ 0 72	+ 0 50
	3	5 57							
	3	6 13							
γ Cephei	6	+ 76 46 3 74							
	23	2 46							
	9	2 88	2 94	2 21	2 14		- 0 80	- 0 07	+ 0 73
	10	2 75							
	7	2 85							
β Ursæ Minoris	13	+ 74 47 20 03							
	25	19 77							
	7	20 2	19 82	17 52	20 20		+ 0 38	+ 2 68	+ 2 30
	14	19 29							
	12	19 81							
β Cephei	12	+ 69 52 52 51							
	34	52 05							
	24	53 03	52 34	52 71	51 90		- 0 44	- 0 81	- 0 37
	21	52 16							
	12	51 97							
Ursæ Majoris	46	+ 62 35 10 72							
	72	11 26							
	71	11 35	11 10	10 70	11 02		- 0 08	+ 0 32	+ 0 40
	71	11 35							
	51	10 83							

NAMES	N Obs	MEAN RIGHT ASCENSION JANUARY 8					DIFFERENCES		
		Obs IN 1843-1847		M AN [*] I	V VI -0 0 II	GRS NW (040) II	III-I	III-II	I-II
		h m s	s	s	s	s	s	s	s
α Cephei	29	21 14 52 49							
	35	52 47							
	32	52 49	52 47	52 22	52 39	- 0 08	+ 0 17	+ 0 25	
	38	52 41							
	19	52 49							
η Draconis	—	16 21 —							
	17	54 16							
	3	54 14	54 08	54 18	54 20	+ 0 12	+ 0 02	- 0 10	
	6	53 95							
	3	54 07							
α Cassiopeæ	34	0 31 44 77							
	45	44 83							
	23	44 63	44 68	44 56	44 76	+ 0 08	+ 0 20	+ 0 12	
	31	44 56							
	12	44 62							
γ Ursæ Majoris	39	11 45 39 10							
	62	39 03							
	57	39 15	39 06	39 03	38 95	- 0 11	- 0 08	+ 0 03	
	57	38 96							
	40	39 07							
β Draconis	5	17 26 55 99							
	20	55 97							
	6	56 01	55 89	56 20	55 93	+ 0 04	- 0 27	- 0 31	
	7	55 67							
	8	55 79							
θ Ursæ Majoris	32	9 22 27 47							
	12	27 42							
	44	27 46	27 42	27 25	27 22	- 0 20	- 0 03	+ 0 17	
	32	27 31							
	21	27 43							
γ Draconis	12	17 53 0 55							
	22	0 48							
	26	0 45	0 44	0 39	0 45	+ 0 01	+ 0 06	+ 0 05	
	8	0 32							
	12	0 41							
η Ursæ Majoris	37	13 41 25 72							
	41	25 54							
	34	25 58	25 62	25 34	25 41	- 0 21	+ 0 07	+ 0 28	
	44	25 46							
	25	25 79							
α Persei	35	3 13 17 18							
	50	17 18							
	47	17 09	17 08	16 94	17 07	- 0 01	+ 0 13	+ 0 14	
	23	17 01							
	35	16 96							
Ursæ Majoris	53	8 48 34 16							
	68	34 05							
	64	34 10	34 07	33 97	33 79	- 0 28	- 0 18	+ 0 10	
	71	33 94							
	48	34 09							

NAMES	N Obs	MEAN R ELINATI N J NU RY					DIFFERENCES		
		Obs	M	V VI	G	CH	III-I	III-II	I-II
		-18 7	I	II	(18 0)	I			
Cephei	33	+ 61 55 48 59							
	35	47 69							
	32	48 76	48 01	49 21	49 01		+ 1 00	- 0 20	- 1 21
	38	47 78							
	19	47 25							
η Draconis	—	+ 61 51 —							
	17	58 00							
	4	58 47	57 78	57 77	58 30		+ 0 52	+ 0 53	+ 0 01
	6	57 84							
	3	56 82							
Cassiopeæ	33	+ 55 41 10 47							
	43	10 45							
	23	10 81	10 51	10 02	11 39		+ 0 88	+ 1 37	+ 0 49
	32	10 42							
	14	10 42							
γ Ursæ Majoris	39	+ 54 33 24 53							
	60	24 79							
	57	24 97	24 52	25 82	23 40		- 1 12	- 2 42	- 1 30
	59	24 47							
	41	23 82							
β Draconis	5	+ 52 25 6 33							
	19	6 59							
	6	6 60	6 43	6 96	6 00		- 0 43	- 0 96	- 0 53
	7	6 72							
	9	5 90							
θ Ursæ Majoris	32	+ 52 22 49 37							
	12	48 88							
	41	48 29	48 59	48 40	47 36		- 1 23	- 1 04	+ 0 19
	32	48 56							
	26	47 87							
γ Draconis	13	+ 51 30 34 35							
	23	33 95							
	23	34 23	33 89	33 90	33 87		- 0 02	- 0 03	- 0 01
	10	33 52							
	12	33 39							
η Ursæ Majoris	38	+ 50 5 19 83							
	38	19 58							
	34	20 01	19 78	20 10	19 45		- 0 33	- 0 65	- 0 32
	45	19 80							
	27	19 68							
Persei	38	+ 49 18 14 53							
	50	14 17							
	47	14 67	14 29	14 27	14 39		+ 0 10	+ 0 12	+ 0 02
	20	14 33							
	32	13 75							
Ursæ Majoris	48	+ 48 38 43 07							
	73	43 59							
	67	43 96	43 73	44 57	45 92		+ 2 19	+ 1 35	- 0 84
	75	43 94							
	52	44 08							

NAMES	N O	M N R I H GEN ION ANUA Y					D ENCES		
		Obs	TI	MEAN	V VI	NW	III—I	III—II	I—II
		IN		I	—0 10 II	(84) III			
		849— 0 7							
		h m s	s	s	s	s	s	s	s
Aur gæ	28	5 5 14 89							
	36	14 88							
	20	14 83	14 83	14 63	14 77	— 0 06	+ 0 14	+ 0 20	
	26	14 75							
	23	14 79							
Cygn1	36	20 36 8 90							
	68	8 91							
	67	8 89	8 88	8 97	8 86	— 0 02	— 0 11	— 0 09	
	69	8 86							
	50	8 83							
12 Canum Ven	44	12 48 46 14							
	47	46 06							
	51	46 13	46 07	46 34	46 13	+ 0 06	— 0 21	— 0 27	
	48	45 98							
	18	46 05							
Ly æ	35	18 31 41 39							
	70	41 39							
	62	41 36	41 36	41 36	41 27	— 0 09	— 0 09	0 00	
	49	41 32							
	39	41 36							
611 Cygn1	28	20 59 57 25							
	28	57 24							
	13	57 15	57 16	57 41	57 19	+ 0 03	— 0 22	— 0 25	
	23	57 04							
	17	57 10							
β Lyræ	21	18 44 21 34							
	30	21 47							
	26	21 39	21 39	21 57	21 40	+ 0 01	— 0 17	— 0 18	
	23	21 35							
	13	21 39							
Geminorum	39	7 24 42 15							
	79	42 07							
	73	42 07	42 07	42 00	42 14	+ 0 07	+ 0 14	+ 0 07	
	68	42 00							
	49	42 04							
ξ Cygn1	29	21 6 20 45							
	35	20 48							
	17	20 37	20 41	20 39	20 44	+ 0 03	+ 0 05	+ 0 02	
	35	20 33							
	19	20 40							
β Tauri	45	5 16 29 85							
	65	29 82							
	54	29 80	29 79	29 70	29 79	0 00	+ 0 09	+ 0 09	
	35	29 74							
	43	29 76							
β Geminorum	34	7 35 49 47							
	88	49 39							
	91	49 26	49 36	49 39	49 38	+ 0 02	— 0 01	— 0 03	
	78	49 32							
	54	49 38							

N MES	N Obs	M N D E L N T I O N J N U R Y				D I F F E R E N C E		
		Obs	M A N	V VI	G W	III—I	III—II	I—II
		18 —1 47	I	II	(4) III			
Aurigæ	29	+ 45 49 59 43						
	38	59 27						
	19	58 99	58 94	60 40	61 19	+ 2 25	+ 0 79	— 1 46
	25	59 00						
	23	58 00						
Cygni	54	+ 44 43 43 63						
	64	44 52						
	69	44 89	44 30	45 37	44 38	+ 0 08	— 0 99	— 1 07
	79	44 44						
	51	44 04						
12 Canum Ven	43	+ 39 9 23 52						
	41	24 18						
	52	24 09	23 94	23 89	23 59	— 0 35	— 0 30	+ 0 05
	47	24 15						
	17	23 78						
Lyræ	55	+ 38 38 33 24						
	72	33 53						
	69	33 48	33 30	31 81	31 70	— 1 60	— 0 11	+ 1 49
	53	33 43						
	34	32 84						
61 Cyg 1	26	+ 37 59 24 33						
	30	23 86						
	11	23 88	24 15	23 80	25 02	+ 0 87	+ 1 22	+ 0 35
	23	24 29						
	18	24 37						
β Lyræ	12	+ 33 11 9 00						
	30	10 05						
	26	9 81	9 71	8 30	10 51	+ 0 80	+ 2 21	+ 1 41
	25	10 19						
	14	9 48						
Geminorum	37	+ 32 13 20 82						
	64	19 56						
	74	19 48	19 73	19 83	19 92	+ 0 19	+ 0 09	— 0 10
	68	19 40						
	51	19 40						
ζ Cygni	31	+ 29 35 38 07						
	36	37 98						
	16	38 06	37 85	36 98	38 28	+ 0 43	+ 1 30	+ 0 87
	34	37 73						
	19	37 42						
β Taur	44	+ 28 28 13 77						
	59	13 28						
	55	13 88	13 53	13 45	13 74	+ 0 21	+ 0 29	+ 0 08
	40	13 62						
	42	13 10						
β Geminorum	32	+ 28 23 43 21						
	65	42 89						
	82	42 48	42 61	42 64	42 45	— 0 16	— 0 19	— 0 03
	79	42 88						
	55	42 10						

MEAN PLACES OF NINETY SEVEN PRINCIPAL FIXED STARS,

NAMES	N O	ME N R GH OEN O J NU RY 4				DI FFERENCE S		
		Obs	MRA	V VI	G NW	III—I	III—II	I—II
		1848—1847	I	—0 10 II	(840) II			
		h m s	s	s	s	s	s	s
α Andromedæ	36	0 0 23 07						
	57	23 12						
	68	23 09	23 07	23 12	23 06	— 0 01	— 0 06	— 0 05
	53	23 01						
	23	23 05						
δ Bootis	15	14 38 13 05						
	32	12 99						
	26	12 98	12 97	13 04	13 01	+ 0 04	— 0 03	— 0 07
	27	12 88						
	18	12 93						
α Cor Bor	12	15 28 7 54						
	54	7 55						
	53	7 50	7 48	7 53	7 47	— 0 01	— 0 06	— 0 05
	32	7 41						
	16	7 42						
δ Leonis	57	9 37 2 58						
	73	2 51						
	65	2 56	2 59	2 57	2 55	— 0 04	— 0 02	+ 0 02
	79	2 60						
	53	2 69						
η Tauri	36	3 38 16 76						
	59	16 78						
	39	16 79	16 75	16 71	16 77	+ 0 02	+ 0 06	+ 0 04
	39	16 73						
	26	16 68						
α Arietis	39	1 58 26 77						
	58	26 81						
	37	26 77	26 74	26 78	26 69	— 0 05	— 0 09	— 0 04
	41	26 66						
	20	26 71						
μ Geminorum	40	6 13 4 98						
	69	34 90						
	58	34 86	34 88	34 86	34 87	— 0 01	+ 0 01	+ 0 02
	40	34 82						
	47	34 84						
δ Geminorum	38	7 10 51 71						
	56	51 65						
	62	51 61	51 64	51 62	51 64	0 00	+ 0 02	+ 0 02
	53	51 59						
	38	51 62						
δ Leonis	42	11 5 51 54						
	74	51 40						
	60	51 41	51 40	51 82	51 32	— 0 08	— 0 50	— 0 42
	66	51 32						
	47	51 34						
α Bootis	34	14 8 35 56						
	81	35 59						
	61	35 53	35 52	35 45	35 54	+ 0 02	+ 0 09	+ 0 07
	52	35 46						
	28	35 47						

NAMES	N Obs	M R N L N U Y				D F R N		
		Obs	M R A	V VI	W (I 0) I	I -I	III-II	I-II
		0 -1 7	I	II				
α Andromedæ	39	+ 28 14	5 15					
	45		5 12					
	69		4 60	4 77	5 79	5 33	+ 0 56	- 0 46
	61		4 79					- 1 02
	27		4 17					
Bootis	15	+ 27 43	50 73					
	34		50 75					
	24		50 59	50 62	50 37	50 10	- 0 52	- 0 27
	28		51 07					+ 0 5
	18		49 97					
α Cor Bor	11	+ 27 14	23 01					
	48		24 05					
	52		23 57	23 54	23 10	23 40	- 0 14	+ 0 30
	30		23 68					+ 0 44
	17		23 38					
Leon s	57	+ 24 29	7 39					
	74		7 08					
	60		6 74	6 88	6 99	5 81	- 1 07	- 1 18
	79		6 74					- 0 11
	57		6 47					
Taur	34	+ 23 37	17 15					
	55		16 47					
	40		16 79	16 56	17 79	15 98	- 0 58	- 1 81
	38		16 66					- 1 23
	23		15 74					
α Arietis	14	+ 22 43	36 73					
	53		36 69					
	30		36 28	36 33	36 61	36 42	+ 0 09	- 0 19
	47		36 50					- 0 28
	1		35 45					
μ Geminorum	40	+ 22 35	14 47					
	46		14 93					
	60		14 16	14 23	15 00	13 99	- 0 24	- 1 01
	51		13 94					- 0 77
	47		13 67					
δ Geminorum	37	+ 22 15	44 33					
	43		44 20					
	60		43 97	43 82	43 78	43 34	- 0 48	- 0 44
	53		43 48					+ 0 04
	39		43 14					
δ Leonis	43	+ 21 22	20 30					
	64		21 09					
	61		20 39	20 47	20 90	19 73	- 0 74	- 1 17
	68		20 68					- 0 43
	49		19 88					
Booti	38	+ 19 59	31 49					
	82		31 32					
	67		30 82	31 07	30 29	30 77	- 0 30	+ 0 48
	58		30 96					+ 0 78
	26		30 77					

N MES	N O	ME N RIGH EN ION J NUARY 4					DIFFERENCE		
		Obs TI		MEAN	V VI	GRS WI	III-I	III-II	I-II
		4 - 847		I	-0 10 II	(84) III			
		h m s		s	s	s	s	s	s
η Bootis	38	13 47 18 27							
	41								
	31			18 17	18 33	18 21	+ 0 04	- 0 12	- 0 16
	31								
	26								
Tauri	44	4 27 1 92							
	73								
	76			1 89	1 83	1 88	- 0 01	+ 0 05	+ 0 06
	69								
	38								
β Leonis	38	11 41 9 05							
	82								
	64			8 97	8 98	8 92	- 0 05	- 0 06	- 0 01
	53								
	41								
Herculis	20	17 7 34 82							
	33								
	27			34 85	34 74	34 83	- 0 02	+ 0 09	+ 0 11
	22								
	21								
Pegasi	38	22 57 2 49							
	52								
	58			2 50	2 59	2 52	+ 0 02	- 0 07	- 0 09
	63								
	26								
γ Pegasi	38	0 5 15 53							
	45								
	38			15 49	15 69	15 53	+ 0 04	- 0 16	- 0 20
	40								
	16								
ζ Aquilæ	20	18 58 17 27							
	27								
	20			17 17	17 18	17 11	- 0 06	- 0 07	- 0 01
	24								
	10								
Leonis	60	10 0 6 74							
	110								
	91			6 69	6 75	6 78	+ 0 09	+ 0 03	- 0 06
	87								
	59								
Ophiuchi	16	17 27 44 51							
	27								
	43			44 46	44 46	44 37	- 0 09	- 0 09	0 00
	34								
	16								
γ Aquilæ	39	19 38 53 46							
	31								
	47			53 42	53 43	53 33	- 0 09	- 0 10	- 0 01
	60								
	39								

MEAN PLACES OF NINETY SEVEN PRINCIPAL FIXED STARS

NAMES	N Obs	M E N I H O N I O J N U R Y					D I F F E R E N C E S		
		Obs	M	V	VI	Gras NW	III—I	III—II	I—II
		1843—1847	I	—0 0 I	(8 0) III				
		h m s	s	s	s	s	s	s	s
ζ Pegasi	41	22 33 43 91							
	50	43 92							
	42	43 94	43 91	43 94	43 89	— 0 02	— 0 05	— 0 03	
	37	43 87							
	6	43 91							
Pegasi	30	21 36 34 36							
	42	34 35							
	28	34 36	34 36	34 37	34 32	— 0 04	— 0 05	— 0 01	
	45	34 34							
	25	34 37							
α Aquilæ	49	19 43 13 16							
	63	13 18							
	70	13 16	13 17	13 17	13 13	— 0 04	— 0 04	0 00	
	79	13 18							
	54	13 19							
α Orionis	45	5 46 46 91							
	80	46 89							
	88	46 87	46 88	46 79	46 85	— 0 03	+ 0 06	+ 0 09	
	61	46 84							
	57	46 87							
ε Hydræ	50	8 38 33 90							
	74	33 83							
	69	33 87	33 87	33 86	33 85	— 0 02	— 0 01	+ 0 01	
	65	33 87							
	44	33 89							
α Serpentis	10	15 36 38 22							
	42	38 16							
	45	38 13	38 15	38 14	38 06	— 0 09	— 0 08	+ 0 01	
	30	38 09							
	11	38 17							
β Aquilæ	29	19 47 41 88							
	32	41 92							
	22	41 92	41 93	41 90	41 84	— 0 09	— 0 06	+ 0 03	
	24	41 92							
	17	42 00							
α Cass Minoris	41	7 31 11 16							
	94	11 13							
	98	11 14	11 14	11 09	10 99	— 0 15	— 0 10	+ 0 05	
	80	11 14							
	58	11 15							
Piscium	32	23 31 58 69							
	22	58 74							
	26	58 79	58 76	58 71	58 59	— 0 17	— 0 12	+ 0 05	
	27	58 78							
	10	58 82							
α Ceti	31	2 54 10 92							
	55	10 97							
	53	11 00	10 97	10 90	10 95	— 0 02	+ 0 05	+ 0 07	
	35	10 97							
	33	11 01							

NAMES	N Obs	M L N				D			
		Obs	M	V V	W (1 0)	II —	I I—II	—	
		— 7							
ζ Peg	43	+ 10 1 26 12							
	51	26 58							
	33	26 69	26 28	26 26	25 91	— 0 37	— 0 35	+ 0 02	
	1	26 78							
	5	25 22							
Pegasi	31	+ 9 10 1 51							
	45	1 27							
	21	1 44	1 22	1 45	1 34	+ 0 12	— 0 11	— 0 23	
	46	1 34							
	29	0 54							
Aquilæ	60	+ 8 27 48 53							
	61	48 76							
	68	48 11	48 3	47 94	46 03	— 2 32	— 1 91	+ 0 41	
	85	48 57							
	58	47 80							
Orion s	46	+ 7 22 23 66							
	68	22 65							
	82	22 50	22 74	23 07	21 15	— 1 59	— 1 92	— 0 33	
	66	22 64							
	54	22 23							
Hydræ	51	+ 6 59 1 95							
	69	2 24							
	72	1 62	1 67	2 17	0 96	— 0 71	— 1 21	— 0 50	
	66	1 46							
	46	1 10							
Serpentis	10	+ 6 55 2 81							
	41	3 46							
	42	3 12	3 17	2 23	1 75	— 1 42	— 0 48	+ 0 94	
	29	3 44							
	12	3 04							
β Aquilæ	29	+ 6 1 25 39							
	34	26 36							
	22	26 47	26 09	27 14	25 52	— 0 57	— 1 62	— 1 05	
	24	26 38							
	16	25 56							
Canis Minoris	39	+ 5 37 6 05							
	72	5 20							
	88	4 57	5 37	2 86	3 77	— 1 60	+ 0 91	+ 2 51	
	79	5 45							
	57	5 26							
Piscium	34	+ 4 47 12 86							
	21	14 29							
	26	13 33	13 41	12 91	11 39	— 2 09	— 1 59	+ 0 50	
	27	13 68							
	12	12 90							
Cetus	33	+ 3 28 42 31							
	58	42 40							
	48	42 8	42 08	42 31	41 08	— 1 00	— 1 23	— 0 23	
	40	42 21							
	33	41 20							

NAMES	N	M N R G S N O N U				D F F E		
		0	MEa	V VI	G W	III—	III—II	I—II
		4 — 847	I	—01 I	() I			
		h m s	s	s	s		s	
δ Aquilæ	22	19 17 41 09						
	23	41 10						
	24	40 99	41 04	41 03	40 79	— 0 25	— 0 24	+ 0 01
	22	40 96						
	15	41 04						
γ Ceti	38	2 35 16 45						
	49	16 49						
	40	16 47	16 48	16 26	16 45	— 0 03	+ 0 19	+ 0 22
	29	16 46						
	24	16 51						
δ Orionis	25	5 24 5 40						
	32	5 42						
	30	5 43	5 44	5 34	5 37	— 0 07	+ 0 03	+ 0 10
	27	5 45						
	24	5 48						
Aquarii	22	21 57 49 27						
	16	49 28						
	22	49 31	49 31	49 22	49 17	— 0 14	— 0 05	+ 0 09
	25	49 31						
	10	49 36						
Orionis	20	5 28 21 04						
	29	21 05						
	24	21 06	21 07	20 89	20 95	— 0 12	+ 0 06	+ 0 18
	24	21 10						
	22	21 09						
δ Ophiuchi	7	16 6 13 62						
	23	13 72						
	13	13 65	13 68	13 71	13 59	— 0 09	— 0 12	— 0 03
	13	13 66						
	4	13 75						
β Aquarii	13	21 23 23 83						
	8	3 80						
	37	23 85	23 86	23 73	23 62	— 0 24	— 0 11	+ 0 13
	21	23 86						
	23	23 94						
α Hydræ	19	9 19 58 35						
	83	58 35						
	33	58 38	58 39	58 28	58 15	— 0 24	— 0 13	+ 0 11
	59	58 43						
	29	58 43						
β Orionis	21	5 7 5 37						
	35	5 56						
	59	5 54	5 53	5 40	5 40	— 0 13	0 00	+ 0 13
	42	5 57						
	28	5 59						
β Libræ	10	15 8 40 41						
	21	40 48						
	23	40 44	40 47	40 36	40 31	— 0 16	— 0 05	+ 0 11
	20	40 46						
	15	40 55						

N MES	N O	M R N D E L N N J U R Y 84				D B R E N O E		
		Obs	M	V	VI	III-I	III-II	I-II
		3-1847	I	II	(80) I			
δ Aquilæ	22	+ 2 48 37 77						
	19	38 92						
	25	38 49	38 32	38 71	36 60	- 1 72	- 2 11	- 0 39
	22	38 43						
	15	37 97						
γ Ceti	37	+ 2 34 47 44						
	49	47 43						
	43	46 47	46 40	48 15	45 72	- 0 68	- 2 43	- 1 75
	33	46 93						
	24	45 74						
δ Orionis	25	- 0 25 7 00						
	32	7 38						
	30	8 05	7 81	7 78	8 30	- 0 49	- 0 52	- 0 03
	26	8 06						
	25	8 57						
Aquarii	23	- 1 4 11 95						
	14	11 30						
	21	12 67	12 07	10 61	14 18	- 2 11	- 3 57	- 1 46
	28	12 05						
	8	12 37						
Orionis	14	- 1 18 19 96						
	28	20 17						
	24	20 77	20 40	20 97	21 75	- 1 35	- 0 78	+ 0 57
	27	20 18						
	21	20 94						
δ Ophiuchi	7	- 3 17 26 02						
	22	25 02						
	16	26 07	25 55	25 09	26 00	- 0 45	- 0 91	- 0 46
	13	24 86						
	4	25 77						
β Aquarii	14	- 6 14 59 20						
	5	58 78						
	32	59 53	59 27	59 26	59 90	- 0 63	- 0 64	- 0 01
	22	59 09						
	22	59 77						
Hydræ	17	- 7 59 21 20						
	56	21 48						
	30	22 57	21 89	22 02	23 54	- 1 65	- 1 52	+ 0 13
	60	21 94						
	29	22 25						
β Orionis	24	- 8 23 5 82						
	35	6 03						
	60	6 32	6 40	6 43	8 24	- 1 84	- 1 81	+ 0 03
	47	6 69						
	33	7 12						
β Libræ	11	- 8 48 23 88						
	23	23 69						
	23	23 98	23 73	23 75	24 93	- 1 20	- 1 18	+ 0 02
	18	23 12						
	14	23 96						

NAMES	N O	M N G		Y			FF EN		
		O		M	V V	G w	I—I	II —II	I—II
		1 2—1 7	I	— I	(0) I				
		l m s	s	s	s			s	
θ Cet	41	1 16 16 69							
	41	16 69							
	38	16 74	16 71	16 69	16 56	— 0 1	— 0 13	+ 0 02	
	35	16 68							
	13	16 75							
V rginis	45	13 17 2 14							
	87	2 16							
	76	2 19	2 20	2 08	2 00	— 0 20	— 0 08	+ 0 12	
	60	2 24							
	32	2 27							
Capr corni	21	20 9 27 12							
	20	27 14							
	28	27 17	27 19	26 93	26 90	— 0 29	— 0 03	+ 0 26	
	21	27 26							
	15	27 27							
δ Hyd et Crat	42	11 11 35 89							
	51	35 86							
	59	35 89	35 91	35 84	35 66	— 0 25	— 0 18	+ 0 07	
	65	35 96							
	47	3 94							
γ Eridani	29	3 50 48 04							
	47	48 10							
	33	48 20	48 14	47 93	47 89	— 0 25	— 0 04	+ 0 21	
	39	48 14							
	24	48 22							
L b æ	15	14 42 18 84							
	33	18 92							
	30	18 91	18 90	18 87	18 75	— 0 15	— 0 12	+ 0 03	
	22	18 89							
	19	18 93							
Canis Majoris	38	6 38 19 27							
	102	19 31							
	102	19 36	19 34	18 79	19 12	— 0 22	+ 0 33	+ 0 55	
	71	19 38							
	59	19 38							
Leporis	19	5 25 5 82							
	26	53 84							
	26	53 84	53 86	53 61	53 68	— 0 18	+ 0 07	+ 0 25	
	29	53 88							
	15	53 91							
β Cet	31	0 35 48 44							
	35	48 46							
	30	48 62	48 53	48 28	48 23	— 0 30	— 0 05	+ 0 25	
	20	48 51							
	10	48 60							
β Scorpu	6	15 56 25 96							
	19	26 06							
	19	26 08	26 05	25 87	25 86	— 0 19	— 0 01	+ 0 18	
	18	26 07							
	3	26 09							

NAMES	N Obs	M N E N				D R N		
		0	M	V VI	^w (1) I	I -I	I I- I	I-II
		43- 7	I	I				
θ Ceti	41	— 8 59	3 03					
	41		4 24					
	38		5 46	4 45	2 43	4 80	— 0 35	— 2 37
	37		4 19					— 2 02
	13		5 34					
Virginis	45	— 10 20	59 15					
	70		59 09					
	70		60 16	59 60	60 36	61 66	— 2 06	— 1 30
	57		59 19					+ 0 76
	31		60 41					
Capricorni	22	— 13 1	14 17					
	17		13 26					
	26		14 18	14 10	11 85	15 01	— 0 91	— 3 16
	20		14 03					— 2 25
	15		14 87					
δ Hyd et Crat	43	— 13 56	24 78					
	45		23 82					
	58		25 04	24 64	25 78	27 28	— 2 64	— 1 50
	67		24 63					+ 1 14
	47		24 92					
γ Eridani	31	— 13 57	11 22					
	46		12 86					
	37		11 96	12 15	11 99	12 12	+ 0 03	— 0 13
	40		11 70					— 0 16
	23		13 01					
Libræ	13	— 15 23	38 14					
	29		37 66					
	30		38 23	38 14	38 84	38 37	— 0 23	+ 0 47
	17		37 96					+ 0 70
	19		38 69					
Canis Majoris	36	— 16 30	26 97					
	89		26 33					
	111		26 40	26 57	29 94	29 28	— 2 71	+ 0 66
	84		26 47					+ 3 37
	58		26 70					
Leporis	20	— 17 56	14 52					
	22		14 38					
	28		15 09	14 89	16 09	15 72	— 0 83	+ 0 37
	28		15 06					+ 1 20
	13		15 41					
β Ceti	31	— 18 50	16 71					
	36		16 70					
	29		17 92	17 32	16 67	18 97	— 1 65	— 2 30
	22		17 09					— 0 65
	8		18 18					
β Scorpi	5	— 19 22	33 60					
	14		32 86					
	16		33 95	33 62	33 87	33 94	— 0 32	— 0 07
	14		33 19					+ 0 25
	4		34 52					

MEAN PLACES OF NINETY SEVEN PRINCIPAL FIXED STARS

N MES	N O	M A N R H E N N J U Y				I F F E E N C S		
		Obs	MEAN	V VI	G W	III—	III—II	I—II
		8 — 7	I	—0 1 I	(84) I I			
		h m s	s	s	s	s		s
μ^1 S g tta 1	12	18 4 29 73						
	20	29 89						
	23	29 89	29 88	29 89	29 58	— 0 30	— 0 31	— 0 01
	12	29 91						
	12	30 00						
β Cor	40	12 26 15 47						
	54	15 49						
	52	15 50	15 52	15 39	15 23	— 0 29	— 0 16	+ 0 13
	38	15 58						
	32	15 5						
15 A gus	46	8 0 56 79						
	66	56 81						
	66	56 82	56 83	56 52	56 62	— 0 21	+ 0 10	+ 0 31
	65	56 87						
	48	56 86						
Scorp	13	16 19 54 83						
	38	54 84						
	47	54 90	54 88	54 76	54 69	— 0 19	— 0 07	+ 0 12
	34	54 87						
	11	54 96						
Canis Majoris	34	6 5 32 18						
	71	32 26						
	68	32 27	32 26	32 14	32 04	— 0 22	— 0 10	+ 0 12
	67	32 31						
	41	32 28						
P sci Aust	36	22 49 4 56						
	61	4 44						
	70	4 60	4 55	4 16	4 17	— 0 38	+ 0 01	+ 0 39
	63	4 53						
	28	4 62						
Col mbæ	39	5 34 2 34						
	55	2 40						
	46	2 44	2 41	2 27	2 24	— 0 17	— 0 03	+ 0 14
	54	2 45						
	47	2 44						
G u s	13	21 58 26 50						
	33	26 22						
	18	26 48	26 40	26 08	26 02	— 0 38	— 0 06	+ 0 32
	23	26 41						
	17	26 38						
A gu	34	6 20 30 75						
	72	30 82						
	70	30 87	30 83	30 45	30 82	— 0 01	+ 0 37	+ 0 38
	34	30 88						
	17	30 82						
Pavonis	16	20 13 21 17						
	21	21 18	21 19	20 75	21 01	— 0 18	+ 0 26	+ 0 44
	10	21 17						
	4	21 23						

Th Pl f th d th f ll wing Stars tak fr m

N MES	N O	M N D E L I N I N N U R Y				D I F F E R E N C E S		
		Obs	M	V	VI	III—I	III—II	I—II
		8 —1847	I	I	(04) I			
μ S g ttar 1	12	— 21 5 36 37						
	18	35 11						
	23	35 98	35 99	36 08	36 53	— 0 54	— 0 45	— 0 09
	11	36 07						
	11	36 40						
β Cor 1	39	— 22 3 18 95						
	50	18 05						
	50	19 15	18 71	20 82	20 05	— 1 34	+ 0 77	+ 2 11
	37	18 37						
	35	19 05						
15 Argus	44	— 23 51 38 18						
	60	38 37						
	69	39 33	39 14	38 40	40 94	— 1 80	— 2 54	— 0 74
	64	39 97						
	48	39 86						
Scorpu	13	— 26 4 55 33						
	30	55 10						
	41	55 94	55 51	55 74	56 25	— 0 74	— 0 51	+ 0 23
	28	55 52						
	11	55 64						
Canis Majoris	33	— 28 45 51 51						
	67	52 49						
	67	53 48	53 08	53 24	55 08	— 2 00	— 1 84	+ 0 16
	65	53 64						
	50	54 26						
α P sc s Aust	42	— 30 26 31 14						
	57	30 67						
	71	31 42	31 46	29 29	31 48	— 0 02	— 2 19	— 2 17
	71	31 62						
	23	32 45						
Columbæ	38	— 34 9 36 30						
	49	36 39						
	47	37 20	37 00	36 60	40 70	— 3 70	— 4 10	— 0 40
	55	37 32						
	47	37 77						
α Gruis	13	— 47 42 29 58						
	32	29 04						
	19	29 91	29 92	27 56	29 72	+ 0 20	— 2 16	— 2 36
	22	29 95						
	17	31 12						
α Argu	36	— 52 36 46 11						
	64	46 00						
	67	47 23	46 77	47 41	47 38	— 0 61	+ 0 03	+ 0 64
	37	46 98						
	19	47 54						
α Pavonis	15	— 57 13 29 31						
	—	—						
	21	30 10	29 84	26 44	30 53	— 0 69	— 4 09	— 3 40
	10	29 42						
	4	30 53						

MEAN PLACES OF NINETY SEVEN PRINCIPAL FIXED STARS

NAMES	N Obs.	MEAN RIGHT		I N J N BY			DIFFEREN			
		Obs	M	V	VI	G	W	III—I	III—I	I— I
		1843—1847	I	— II	(840) III					
Eridani		h m s	s	s			s	s		
	33	1 31 56 11								
	37	55 92								
	37	56 31	56 14	56 19	56 06	— 0 08	— 0 13	— 0 05		
	32	56 18								
18	56 16									
Argus	57	9 12 56 44								
	72	56 63								
	57	56 57	56 57	56 59	56 58	+ 0 01	— 0 01	— 0 02		
	76	56 70								
	43	56 53								
γ Argus	50	10 39 3 92								
	63	4 02								
	74	3 95	3 96	3 98	3 92	— 0 04	— 0 01	+ 0 03		
	80	3 98								
	47	3 94								
β Centauri	30	13 52 56 63								
	30	56 77								
	16	56 65	56 72	56 51	56 65	— 0 07	+ 0 14	+ 0 21		
	38	56 72								
	18	56 82								
α^2 Centauri	17	14 29 7 81								
	29	7 86								
	17	7 78	7 81	8 04	7 91	+ 0 10	— 0 13	— 0 23		
	18	7 79								
	14	7 83								
α Crucis	14	12 18 1 54								
	46	1 75								
	37	1 47	1 62	1 38	1 65	+ 0 03	+ 0 27	+ 0 24		
	30	1 67								
	18	1 67								
Trianguli Aust	2	16 32 19 25								
	6	19 08								
	4	19 05	19 07	19 33	18 83	— 0 24	— 0 50	— 0 26		
	5	19 00								
	2	18 97								

NAME	N O	M E N I N A O N N U R Y					D I F F E R E N C E		
		0	π	M	V	VI	III—	III—II	I—II
		8	— 47	I	I	(1 0) I			
Eridani	34	— 58	1 31 68						
	37		31 42						
	38		31 94	31 82	33 27	32 80	— 0 98	+ 0 47	+ 1 45
	40		31 97						
	41		32 07						
A g s	57	— 58	37 33 64						
	69		34 16						
	51		34 86	34 48	35 78	34 82	— 0 34	+ 0 96	+ 1 30
	75		34 78						
	47		34 97						
η Argus	52	— 58	52 13 38						
	61		13 42						
	76		13 75	13 84	14 19	15 44	— 1 60	— 1 25	+ 0 35
	80		14 12						
	48		14 53						
β Centauri	30	— 59	37 15 28						
	26		15 15						
	17		17 03	16 10	14 98	16 26	— 0 16	— 1 28	— 1 12
	36		15 91						
	18		17 14						
Centauri	17	— 60	11 2 27						
	27		26 17						
	17		26 82	26 53	26 32	21 88	+ 4 65	+ 4 44	— 0 21
	17		26 24						
	14		26 17						
Crucis	41	— 62	14 20 93						
	45		20 05						
	37		19 42	20 29	21 44	19 75	+ 0 54	+ 1 69	+ 1 15
	29		20 10						
	24		20 96						
Trianguli Aust	2	— 68	43 57 48						
	6		55 93						
	4		58 00	56 93	58 65	57 27	— 0 34	+ 1 38	+ 1 72
	6		56 44						
	2		56 80						

SUBSIDIARY OBSERVATIONS OF THE FIXED STARS

FOLLOWING the Permanent Catalogue I will now give the Mean Places of several of the Fixed Stars which for various reasons as already explained have again been re-observed in the first column on either page—following the name and number of the Star—is given the number under which its place is to be found in Vol VI in the second column given the Mean Place as derived from observations in two and in some cases in three separate years the separate determination being reduced to a common epoch (1845) place all chance of error out of consideration the third column contains the places from Volume VI save that for the left hand page the determinations of A R are reduced by 0.10 in order to render them comparable with the Recent observations in which the Equinoctial Point had been changed to this amount and finally under the head of Remarks will be found the occasion which has led to re-examination of the place a hasty inspection of these Remarks which have been made in the course of computation and without further consideration induces me to believe that in several instances a table amount of proper motion has been made out but want of leisure at the present moment only permits me to record results in their discussion to be entered upon at some future time

MEAN PLACES

o

SEVERAL OF THE FIXED STARS,

FROM

OBSERVATIONS MADE AT THE MADRAS OBSERVATORY,

IN THE YEARS 1843—1847

COMPARED WITH THE RESULTS OF FORMER YEARS &c &c

REDUCED TO JANUARY 1 1845

MEAN RIGHT ASCENSIONS OF STARS										
S		N	M R		Asc		JAN		84	REMARKS
			R	NT	V	VI				
			Obs				(-0)			
			h m							
11	Cassio ρ	β	(2)	0	0	56	17	56	34	P a z i a assigns a P M + 0 082 P w th 1835 g i e s 0 075 1835 — 1845 — 0 058
	Phœnicis		(26)	0	6	9	72	9	64	
	App Sculp	α	(53)	0	10	32	04	32	13	
	Tucanæ	ζ	(60)	0	11	58	00	58	03	The p esent result confirms the la ge P M + 292 <i>n tim</i> s giv in Vol VI
	Phœnicis		(88)	0	18	34	17	34	40	The P M + 033 no doubt too large
	Phœnic		(89)	0	18	37	03	36	48	The P M + 013 ppear to be too small
	Cet		(115)	0	22	37	7	37	44	
53	Cassiopeia		(135)	0	25	26	27	26	74	P a z i assigns a P M + 005 P w th 1835 g ves + 028 1835 — 1845 — — 019
	App Sculp		(140)	0	26	7	89	7	64	
13	Cet		(151)	0	27	16	38	16	36	P M + 036
	Cet		(166)	0	29	23	01	23	01	Confirm ng the P M + 111
	Ceti		(184)	0	32	49	20	49	04	
	Cassio ρ		(202)	0	36	6	71	6	61	
17	Ceti	ϕ	(203)	0	36	22	46	22	07	
	Phœnicis		(232)	0	39	41	04	41	41	
64	Piscium	γ	(239)	0	40	50	40	50	38	Piazz i ss gns a P M + 040 P w th 1835 g es — 004 1835 — 1845 — — 002
37	Androm	μ	(282)	0	48	9	56	10	13	The Observat ons of this Star n 1835 a well as on tle present occasion re very accordant <i>inter se</i> has the P M altered?
	Cephei		(280)	0	48	36	77	34	54	P M according to He el us + 0 170 } La Lande + 0 020 } Piazz i s notes Pia i — 0 340 } P w th 1835 gives + 0 096 1835 — 1845 — + 0 319

MEAN DECLINATIONS OF STARS

S	N M	M D		J 4		REMARKS
		O R		V VI		
11	Cassiope β ()	+58 17 41 35		42 83		
	Phœnicis (26)	—47 51 49 69		50 33		Differs about 10 from the Brisbane Catalogue
	App Sulp χ (53)	—37 22 16 55		12 88		Differs 10 from the Brisbane Catalogue
	Tucanæ ζ (60)	—65 47 6 72		2 57		The P M of the St (+ 183) was obtained from a comparison of the Observations 1835 with the B place—to reconcile the Madras Observations we must assume + 1 41
	Phœnicis (88)	—44 32 —		—		
	Plœnis (89)	—43 8 52 43		52 24		Confirming the P M (— 0 44)
	Cet (115)	—24 38 44 88		43 92		Piazzi assigns a P M — 0 40 P with 1835 gives + 0 06 1835 — 1845 — — 0 01
53	Cassiopeia (135)	+24 6 18 75		18 96		Piazzi assigns a P M + 0 40 P with 1835 gives 0 00 1835 — 1845 — + 0 02
	App Sculp (140)	—35 50 9 78		10 12		Confirming the P M — 0 48
13	Ceti (151)	— 4 26 —		—		
	Ceti (166)	—25 37 13 42		13 38		
	Cet (184)	— 5 12 10 47		11 65		Piazzi assigns a P M + 0 35 P with 1835 gives — 0 02 1835 — 1845 — + 0 10
	Cassiope (202)	+47 26 6 95		7 19		Piazzi assigns P M — 0 30 P with 1835 gives + 0 07 1835 — 1845 — + 0 05
17	Ceti φ (203)	—11 27 15 29		14 04		Piazzi assigns P M + 0 30 P with 1835 gives — 0 01 1835 — 1845 — — 0 13
	Phœnicis (232)	—52 51 7 02		8 45		Differs from the Brisbane Catalogue 9 or 10 seconds
64	Piscium γ (239)	+16 6 10 00		11 04		
37	Androm μ (282)	+37 39 26 18		26 38		Piazzi assigns a P M + 0 40 P with 1835 gives 0 00 1835 — 1845 — — 0 02
	Cephei (280)	+85 25 19 20		19 62		P M according to Hevelius — 0 85 } La Lande 0 00 } Piazzi's notes Piazzi + 0 53 } P with 1835 + 0 13 1835 — 1845 + 0 09

MEAN RIGHT ASCENSIONS OF STARS (Continued)						
S	N	M R A		J	84	REMARKS
		R		V			VI
		o		(-0)		
		h m				
App Sculp	(300)	0 51	8 19	7 83		
322 Cephei	(298)	0 51	30 82	29 72		P M + 110
190 Piscium	(333)	0 57	48 10	48 03		The proper motion (— 025) confirmed
Cassiope μ	(335)	0 58	0 17	59 73		P i a signs a P M + 0 380 P with 1835 gives + 384 1835 — 1845 — + 428
79 Piscum ψ^2	(349)	0 59	38 87	38 96		
30 Cet	(351)	0 59	58 77	58 33		P i a s gns P M — 047 P with 1835 gives + 006 1835 — 1845 — + 050
80 Piscium ϵ	(355)	1 0	23 40	23 37		Confirming the P M — 025
43 Androm β	(361)	1 1	4 09	3 87		P i a z z i assigns a P M + 023 P with 1835 g i e s — 033 1835 — 1845 — — 011
Ceti	(399)	1 6	34 27	34 07		
Cassiopeia	(419)	1 10	47 13	48 43		P w th 1835 g i e s a P M + 070 1835 — 1845 — — 060
Cassiopeia	(420)	1 10	49 57	50 17		P w th 1835 g i e s a P M + 025 1835 — 1845 — — 035
50 Androm	(516)	1 27	43 16	43 35		
Phoenix ψ	(564)	1 34	39 36	39 02		
52 Ceti	(575)	1 36	52 20	52 14		Confirmi g the large P M — 117
Camelop	(574)	1 37	16 83	16 11		
App Sculp	(579)	1 38	23 44	23 27		P i z z ass gn a P M + 031 P with 1835 give + 016 1835 — 1845 — + 033
Fornacis	(594)	1 41	26 30	26 07		This is deduced f om the place g i e n in Vol VI not al lowing the P M (— 123) there must be some error in P i a z z i s place
Mach Elect κ	(603)	1 43	7 52	7 52		

MEAN DECLINATIONS OF STARS (Cont ued)

S N		M D J		REMARKS
		R NT Obs	V V	
App Sculp	(300)	—30 11 46 21	43 70	P i gn P M — 0 30 P th 1835 g e + 0 07 1835 — 1845 — — 0 18
322 Ceph ei	(298)	+86 18 57 36	57 99	
190 Pisc un	(333)	+ 4 5 53 48	54 16	
Cass op μ	(335)	+54 9 27 07	26 58	P 12 g a P M — 0 65 P with 1835 g i — 1 57 1835 — 1845 — — 1 52
79 Pisc um γ	(319)	+19 54 48 80	50 04	P 12 a a P M — 0 2 P th 1835 g e — 0 06 1835 — 184 — — 0 18
30 Cet	(351)	—10 36 57 29	53 89	
80 Piscium	(355)	+ 4 49 42 01	44 04	
43 Androm β	(361)	+34 47 49 83	51 83	
Ceti	(399)	— 8 44 41 56	40 29	l \ tl 1835 give P M + 0 34 1835 — 1845 — + 0 21
Cassiopeiæ	(419)	+63 51 —	—	
Cassiopeiæ	(420)	+63 50 35 17	35 68	
50 Androm	(516)	+40 37 41 25	41 71	P w tl 1835 g ves P M — 0 32 1835 — 1845 — — 0 37
Phœni ψ	(564)	—38 55 13 79	13 32	P 12 a gn a P M + 0 36 P w th 1835 g e + 0 05 1835 — 1845 — 0 00
52 Cet	(575)	—16 45 19 69	19 32	P w tl 1835 g es a P M + 0 84 1835 — 1845 — + 0 81
Camelop	(574)	+81 11 16 06	15 29	P a 21 a s g s a P M + 0 36 P w th 1835 g es + 0 04 1835 — 1845 — + 0 12
App Sculp	(579)	—25 49 42 39	41 36	P 221 s gns a P M — 0 44 P with 1835 g i es + 0 08 1835 — 1845 — — 0 02
Fornacis	(94)	—27 1 —	—	
Mach Elect h (603)	(603)	—39 11 10 37	10 20	Confirming P M + 0 34

MEAN RIGHT ASCENSIONS OF STARS (<i>Cont nued</i>)				
S	N M	M R _t		REMARKS
		R NT Obs	JAN 1 84 V VI (-0)	
		h m		
Ar etis γ	(614)	1 45 1 96	1 92	
5 Arietis γ	(615)	1 45 1 99	1 97	(See Note)
147 Cass op	(639)	1 49 48 59	48 30	P w th 1835 gives a P M + 073 1835 — 1845 + 102
A ietis	(670)	1 54 31 59	31 31	Confirming the forme result the B Cat must be 30 seconds in e ror
Phœnici α	(677)	1 55 29 72	29 19	P w th 1835 gives a P M — 035 1835 — 1845 — + 018
62 Cet	(698)	2 1 19 17	18 88	
Phœnicis ω	(714)	2 3 27 19	26 89	P ass gns a P M — 049 P w th 1835 g ve 000 1835 — 1845 — + 030
Horolog	(745)	2 6 56 93	57 54	
Trianguli δ	(746)	2 7 36 76	36 39	P i zz ass gns a P M + 086 P with 1835 g i e + 038 1835 — 1845 — + 075
T i guli	(751)	2 8 26 02	26 25	
T ngul	(752)	2 8 26 65	26 65	
M ch Elect φ	(775)	2 12 2 03	1 97	
And om	(777)	2 13 15 55	15 81	P w th 183 gives a P M + 033 1835 — 1845 — + 007
Phœnici	(778)	2 13 3 64	3 82	
Horologu	(789)	2 14 45 50	46 01	
Horolog	(815)	2 18 15 47	16 04	Diffe about 8 seconds f om B
Horolog	(817)	2 18 28 14	28 78	Dffe about 16 seconds from B
Ho olog	(818)	2 18 32 27	32 33	Differ about 20 econds from B
26 Arietis	(833)	2 21 57 62	58 08	P azz as g s a P M — 007 P with 1835 + 062 1835 — 1845 + 016
46 T ianguli	(854)	2 26 23 50	22 99	P a i as igns a P M — 045 P with 1835 g ve — 006 1835 — 1845 — + 045
Ceti	(861)	2 27 35 46	35 29	Confirming the large P M + 123

MEAN DECLINATIONS OF STARS (Continued)

S N		M D J 84		REMARKS
		R O			V VI
Ar etis γ	(614)	+18 31 52 57	53 71	The P M in Vol VI is erroneous (See errata)
5 Arietis γ	(615)	+18 32 0 47	2 82	
147 Cas iop	(639)	+76 31 52 15	52 97	
Ariet s	(670)	—17 19 10 43	8 92	
Phœnicis χ	(677)	—45 27 39 66	37 47	P with 1835 gives P M + 0 34 1835 — 1845 — + 0 12
67 C t	(698)	— 3 4 1 48	2 65	Piaz assigns a P M + 0 26 P with 1835 gives — 0 05 1835 — 1845 — + 0 07
Phœnicis ω^a	(714)	—41 36 5 19	2 03	Our P M (— 0 08) is probably too small
Horolog	(745)	—56 12 10 12	7 98	Confirming the supposed error of the Brisbane determination
Tr angul δ	(746)	+33 30 40 91	41 03	
Tr angul	(751)	+28 1 21 19	—	Not observed before (P M — 0 09)
Tr angul	(752)	+28 1 33 13	34 20	
Mach Elect ρ	(775)	—26 40 52 12	54 15	P with 1835 gives P M + 0 40 1835 — 1845 — + 0 60
Androm	(777)	+40 46 —	—	
Phœ ic s	(778)	—39 41 33 87	32 52	Confirming the supposed error of B
Horolog	(789)	—56 49 46 31	47 27	Do do do do
Horologu	(815)	—57 15 6 17	3 77	Do do do do
Horologu	(817)	—57 15 14 77	13 04	Do do do do
Horolo	(818)	—57 31 12 89	8 92	Compared with the Brisbane Catalogue the P M = — 0 2
26 Arietis	(833)	+19 9 49 90	49 68	
46 Triangul	(854)	+34 0 26 62	26 90	Piaz assigns a P M — 0 32 P with 1835 gives + 0 22 1835 — with 1845 — + 0 19
Ceti	(861)	+ 6 8 38 49	37 78	Confirming the P M + 1 48

MEAN RIGHT ASCENSIONS OF STARS (Continued)				
S	N	M R		REMARKS
		R NT DSS	V V (-)	
		h m		
Ceti d	(863)	2 27 33 98	33 89	
13 Per ei θ	(900)	2 33 38 54	38 27	P z ss gns a P M + 045 P with 1835 gi es + 007 1835 — 1845 — + 034
Pe se	(951)	2 41 58 71	58 65	
47 A eti	(987)	2 49 13 43	13 71	P with 1835 gi e a P M + 038 1835 — 1845 — + 010
Perse	(1039)	2 57 54 70	5 04	P wtl 1835 g e a P M + 141 1835 — 1845 — + 107
Horolog	(1060)	3 0 42 60	42 43	
E id n	(1144)	3 13 44 54	44 29	P with 1835 give a P M + 266 1835 — 1845 — + 291
Camelop	(1152)	3 15 49 74	49 70	
Horologu	(1157)	3 16 33 30	32 83	
Erdan	(1161)	3 17 20 16	20 51	
E d n	(1175)	3 19 44 89	44 87	
Fornac s	(1205)	3 25 18 02	17 83	
T u i	(1210)	3 27 21 76	22 08	P with 1835 g es a P M — 012 1835 — 1845 — + 020
E ida	(1216)	3 28 2 96	4 08	Th pl ce g v n Vol VI w der d fom l s rvation i 1838 P M = — 16
Messoi s m	(1245)	3 34 6 02	4 14	P with 1835 g ves a P M — 042 Th diffe e ce is quite naccountable
Er dan	(1300)	3 40 13 17	12 86	Confi ml g the supposed error of B
E idan g	(1327)	3 43 39 07	38 79	P i gns a P M — 068 P with 1835 g e — 025 1835 — 1845 — + 003
45 T u i	(1441)	4 3 5 44	5 52	See e ta
40 Erdan d	(1475)	4 8 8 50	8 27	P z a s g s a P M — 147 P with 1835 g e — 148 1835 — 1845 — — 125
220 Persei	(1514)	4 14 35 17	35 18	
69 Taur	(1533)	4 17 2 24	2 31	

MEAN DECLINATIONS OF STARS (Continued)				
S	N	M D CLIN		REMARKS
		R	V VI	
		O		
Ceti d	(863)	— 4 13 24 76	24 65	Confirming the P M — 0 56
13 Persei θ	(900)	+48 34 5 14	5 40	
Persei r	(951)	+34 25 5 94	4 28	
47 Arietis	(987)	— — — —	—	
Pe sei	(1039)	+49 0 56 97	59 00	
Horolog	(1060)	—61 39 4 80	4 89	Confirming the assumed error of the Brisbane determination
Eridani e	(1144)	—43 39 57 99	56 52	P with 1835 gives a P M + 0 84 1835 — 1845 — + 0 69
Camelop	(1152)	+59 42 27 64	—	The Declination given in former Vols appears to belong to another Star (P M + 0 01)
Horologu	(1157)	—48 20 1 19	59 79	B Catalogue 10 in error
Eridani	(1161)	—41 48 34 90	36 37	See errata
Eridan	(1175)	—38 51 37 96	36 92	See errata
Fornacis	(1205)	—34 4 41 79	39 08	B Catalogue 10 in error
Tauri	(1210)	+16 57 35 88	34 27	P with 1835 gives a P M — 0 30 1835 — 1845 — — 0 14
Eridani	(1216)	—38 33 24 66	24 61	
Messoris m	(1245)	+70 50 — —	—	
Eridan	(1300)	—39 4 10 35	7 08	
Eridani g	(1327)	—36 40 24 45	22 14	
45 Tauri	(1441)	+ 5 6 54 64	53 48	
40 Eridani d	(1475)	— 7 53 51 03	51 88	Pazzi assigns a P M — 3 60 P with 1835 gives — 3 45 1835 — 1845 — — 3 37
220 Persei	(1514)	+33 35 49 06	49 44	See errata
69 Tauri	(1533)	+22 27 24 73	26 01	Piazz assigns a P M — 0 30 P with 1835 gives + 0 03 1835 — 1845 — — 0 10

MEAN RIGHT ASCENSIONS OF STARS (Continued)					
S	N M	M R		J 1 8	REMARKS
		R NT Obs	V VI (-0)		
		h m			
3	Orionis τ	(1706)	4 42 57 09	57 08	
1	Leporis	(1809)	4 56 12 79	12 43	P a z i a s s g a P M + 018 P with 1835 g ⁱ es — 021 1835 — 1845 — + 015
15	Aurigæ λ	(1885)	5 8 14 56	14 36	P with 183 gives a P M + 044 1835 — 1845 — + 064
	Columbæ	(1918)	5 11 53 98	53 81	
	Orionis	(1931)	5 13 56 87	55 95	P w th 1835 g ⁱ es a P M — 069 1835 — 1845 — + 023
	Camelop	(2061)	5 28 46 12	46 35	
399	Tauri	(2135)	5 38 25 05	24 85	
15	Leporis δ	(2190)	5 44 39 52	39 31	See errata
	Columbæ β	(2200)	5 45 29 94	29 77	
33	Aurigæ δ	(2203)	5 46 46 15	46 02	
	Aur gæ c	(2250)	5 52 7 49	7 53	
	Monocer	(2272)	5 54 41 10	40 97	
107	Camelop	(2285)	5 56 —	—	
	Columbæ ρ	(2318)	6 0 12 77	12 99	
	Columbæ π	(2338)	6 1 53 70	53 68	
	Equ Pict	(2343)	6 2 16 21	16 66	This tar differs 30 seconds from B
	Columbæ π^2	(2354)	6 3 4 20	4 20	P a z z a s s g n s P M — 0 60 P with 1835 g ⁱ es + 0 07 1835 — 1845 — + 0 07
24	Monocer	(2404)	6 9 3 43	3 81	
	Canis Maj	(2438)	6 12 31 82	31 85	

MEAN DECLINATIONS OF STARS (Continued)

S	N	M E A D		J	8	REMARKS
		O	R T I			
3	O ion s	(1706)	+ 5 20 5 81	5 74		Pazz as g s P M + 0 44 P with 1835 g i es — 0 02 1835 — 1845 — — 0 01
1	Leporis	(1809)	—23 1 18 59	17 06		Paz i ss gns a P M + 0 35 P w th 1835 g i es + 0 08 1835 — 1845 — — 0 08
15	Aur gæ λ	(1885)	+39 57 15 46	17 56		P w tl 1835 gives a P M — 0 60 1835 — 1845 — — 0 81
	Columbæ	(1918)	—35 3 1 29	2 02		P w tl 1835 g i es a P M — 0 41 1835 — 1845 — — 0 34
	O ionis	(1931)	+ 3 24 53 01	53 77		
	Camelop	(2061)	+53 24 36 23	34 55		P with 1835 gives a P M — 0 46 1835 — 1845 — — 0 28
399	Tauri	(2135)	+24 37 29 45	28 35		Piazz i assigns a P M + 0 60 P with 1835 gives + 0 08 1835 — 1845 — + 0 19
15	Leporis δ	(2190)	—20 53 45 90	45 68		P a z i ass gns a P M + 0 62 P with 1835 g i es a P M — 0 59 1835 — 1845 — — 0 61
	Columbæ β	(2200)	—35 49 47 37	48 86		P w th 1835 gives a P M + 0 37 1835 — 1845 — + 0 52
33	Aur gæ δ	(2203)	—54 15 52 68	52 34		Pia z i signs a P M — 0 42 P with 1835 gives — 0 05 1835 — 1845 — — 0 02
	Aur gæ c'	(2250)	+42 54 32 34	34 14		See errata
	Monocer	(2272)	— 7 17 41 86	42 84		See errata
107	Camelop	(2285)	+65 44 19 18	18 16		Differs 17 from Greenwich Catalogue of 1840
	Columbæ ρ	(2318)	—45 4 47 77	47 41		P with 1835 g ves a P M + 0 41 1835 — 1845 — + 0 38
	Columbæ π ¹	(2338)	—42 16 58 06	56 83		Piazz assigns a P M — 0 28 P with 1835 g i es + 0 04 1835 — 1845 — — 0 08
	Equ P ct	(2343)	—59 48 32 95	30 76		Confirming the supposed erro of B
	Columbæ π ²	(2354)	—42 7 56 01	57 33		Piazz i assigns a P M — 0 44 P with 1835 gives + 0 12 1835 — 1845 — + 0 25
24	Monocer	(2404)	+ 5 8 36 70	38 13		See errata
	Can i M j	(2438)	—13 29 40 76	40 78		See errata

MEAN RIGHT ASCENSIONS OF STARS (Continued)								
S		N		M R		84		REMARKS
				R NT		V V		
				O		(-)		
		h m						
Equ Pict	(2449)	6	14	5	08	5	34	I presume this to be the Star intended as No 1210 in the B is bane Catalogue
Equ Pict	(2450)	6	13	44	51	—		The Star B 1211 is not now visible the are three Stars here altogether two of which Nos 2449 and 2452 agree with B 1210 and 1212 but 2450 (whose place was omitted in Vol VI) differs about 20 seconds from B 1211
Equ Pict	(2452)	6	14	9	82	10	00	
1 Can Maj ζ	(2451)	6	14	21	88	21	69	
122 Camelop	(2480)	6	19	40	26	38	76	
Geminor	(2515)	6	22	—		20	24	
Can Maj D ^a	(2523)	6	22	53	21	53	17	
236 Aurigæ	(2540)	6	24	59	86	59	91	
22 Navis	(2555)	6	26	1	54	1	71	
Equ Pict μ	(2588)	6	29	39	88	39	94	
Navis	(2605)	6	31	46	24	46	18	
Arg in pup x	(2701)	6	42	3	46	2	85	
101 Canis Maj	(2749)	6	47	23	94	23	95	P with 1835 give a P M + 0 30 1835 — 1845 — + 0 29
Geminor	(2799)	6	53	38	81	38	92	
Navis C	(2843)	6	59	8	17	8	10	
Geminor	(2841)	6	59	20	38	20	50	
28 Canis Maj ω	(2936)	7	8	30	85	31	27	

MEAN DECLINATIONS OF STARS (Continued)

S N		M D		J 1 8		REMARKS
		R Obs		V V		
Equ Pict	(2449)	—59	9 11 38	9 92		D fers 10 f om No 1210 B there i probably a small (—) P M
Equ P ct	(2450)	—59	5 55 34	—		D fers 1 25 f om B 1211
Equ Pict	(2452)	—59	8 33 07	30 58		This Star h s been re observed i order to settle its place relati e to Nos 2449 nd 2450 or B 1210 and 1212
1 C n Maj ζ	(2451)	—29	59 56 05	55 12		Piaz ss g a P M — 0 25 P wtl 1835 gives + 0 07 1835 — 1845 — + 0 02
122 Camelop	(2480)	+79	42 54 55	54 41		P with 1835 gives a P M — 0 53 1835 — 1845 — — 0 52
Gemino	(2515)	+32	33 30 72	30 29		The Greenwich Catalogue for 1840 is about 8 m error
Can Maj D	(2523)	—32	16 28 34	27 63		Piazzi assigns a P M — 0 30 P with 1835 gives + 0 15 1835 — 1845 — + 0 08
236 Aurigæ	(2540)	+31	32 5 70	4 87		P with 1835 gives a P M + 0 38 1835 — 1845 — + 0 30
22 Navis	(2555)	—40	48 35 19	32 06		Piaz assigns a P M — 0 50 P w tl 1835 gives + 0 05 1835 — 1845 — — 0 26
Equ Pict μ	(2588)	—58	38 13 36	12 49		
Navis	(2605)	—38	1 9 46	9 72		Piazzi assigns a P M + 0 40 P with 1835 gives + 0 06 1835 — 1845 — + 0 08
A g i pup x	(2701)	—37	45 41 53	40 53		Piaz assigns a P M — 0 30 P with 1835 gives + 0 11 1835 — 1845 — + 0 01
101 Canis Maj	(2749)	—28	19 55 44	54 88		P wtl 1835 gives a P M — 0 39 1835 — 1845 — — 0 45
Geminor	(2799)	+29	35 27 50	28 35		P w th 1835 gives a P M — 0 70 1835 — 1845 — — 0 78
Navis C	(2843)	—42	6 40 79	42 02		Piaz assigns a P M — 0 40 P with 1835 gives a P M + 0 08 1835 — 1845 — + 0 20
Gemino	(2841)	+15	46 3 01	—		See errata
28 Canis M j ω	(2936)	—26	30 24 78	25 25		Piazzi assigns a P M + 0 40 P v th 1835 gives + 0 07 1835 — 1845 — + 0 12

MEAN RIGHT ASCENSIONS OF STARS (Continued)				
S	N	M R Asc JAN		REMARKS
		O R	V VI (-)	
		h m		
Navis L	(2939)	7 8 48 63	48 32	
Can s Maj	(2951)	7 10 22 46	22 28	
Na is	(3023)	7 16 53 31	53 26	Confirm ng the presumed er or of the Brisbane determinat on
Geminor	(3058)	7 21 0 87	0 89	
Navis k ³	(3086)	7 24 40 81	40 84	P i a s s g s a P M — 0 60 P with 1835 g es — 0 18 1835 — w tl 1845 — — 0 21
Na z	(3116)	7 28 14 65	14 70	See ata
Gem nor	(3174)	7 34 —	7 88	
N is T	(3209)	7 38 9 37	9 56	
82 Gem nor B	(3222)	7 39 —	—	
Arg in pup	(3248)	7 41 38 57	38 59	
Navi	(3254)	7 42 31 34	31 28	
217 Navis	(3256)	7 42 21 54	—	Anothe Star observed in 1835
7 Navi ξ	(3262)	7 42 —	—	
Canc ψ	(3432)	8 1 6 47	6 28	
19 Cancr λ	(3519)	8 11 —	—	
Navis	(3806)	8 39 12 64	12 70	
Pix Naut	(3850)	8 43 33 99	33 80	
16 Hydus ζ	(3882)	8 47 11 86	11 88	
Urs M j φ	(3891)	8 48 28 93	28 29	P a z s g n a P M — 1 47 (See Piazzis note) P with 1835 g e — 0 13 1835 — 1845 — + 0 51
79 Cancr	(3982)	9 0 —	—	
18 Urs Maj ε	(4017)	9 4 59 58	59 59	

MEAN DECLINATIONS OF STARS (*Continued*)

S		N	M		D	J	S	REMARKS	
			R	O					V	VI
			O						
N	is	L	(2939)	—44	23	22	31	19 83	P wtl 1835 ves a P M + 0 54 1835 — 1845 — + 0 29
Canis	Maj		(2951)	—27	36	38	60	40 78	P s g s a P M + 0 40 P ith 1835 gi e + 0 03 1835 — 1845 — + 0 25
N			(3023)	—51	54	28	91	27 07	
Gemino			(3058)	+28	1	37	30	—	See e rata
N	s	k	(3086)	—30	38	20	88	24 18	
N	is		(3116)	—36	0	15	01	15 38	
Gem	nor		(3174)	+2°	45	34	46	37 52	The Greenwich Catalogue for 1840 gi es 33 24
N	v	s T	(3209)	—44	46	53	59	56 54	P with 1835 gives a P M — 0 50 1835 — 1845 — — 0 20
82	Gemino	r B	(3222)	+23	31	9	84	12 62	Th Greenwich Catalo ue for 1840 gives 8 27
Arg	in	pup	(3248)	—25	33	22	46	21 83	See errata
Nav	s		(3254)	—24	31	40	92	40 68	The Greenwich Catalogue for 1840 gives 44 83
217	Navis		(3256)	—24	34	42	86	—	Another Star observed in 1835
7	Navis		(3262)	—24	28	28	73	26 93	Tle Greenwich Catalogue for 1840 gives 29 03
Cancer	ψ^2		(3432)	+25	58	16	67	19 95	Piazzi ass gns a P M — 0 42 } Only one observa P with 1835 gives — 0 62 } tion in 1835 P — 1845 — — 0 47 }
19	Cancer	λ	(3519)	+24	30	19	85	23 75	The Greenwich Catalogue for 1840 g ves 19 85
Na			(3806)	—42	3	43	80	44 27	P with 1835 gi es a P M — 0 38 1835 — 1845 — — 0 34
Pix	Naut		(3850)	—32	12	13	60	14 62	P with 1835 g es a P M — 0 38 1835 — 1845 — — 0 28
16	Hydæ	ζ	(3882)	+ 6	31	55	57	53 89	Piazzi a signs a P M — 0 48 P with 1835 gives — 0 01 1835 — 1845 — + 0 16
Urs	Maj	ρ	(3891)	+ 68	13	—	—	—	
79	Cancer		(3982)	+22	37	19	88	20 70	The Greenwich Catalogue for 1840 gives 16 60
18	Urs	Maj e	(4017)	+54	39	26	92	24 78	Piazzi ass gns a P M — 0 27 P with 1835 gives + 0 07 1835 — 1845 — + 0 28

MEAN RIGHT ASCENSIONS OF STARS (<i>Continued</i>)					
S	N M	M R ASCEN J		REMARKS	
		R NT O	V VI (-0)		
		h m			
Dracon s	(4102)	9 14 29 11	28 72		
Pix Naut θ	(4112)	9 14 38 38	38 16	P as gns a P M	— 0 20
				P with 1835 gives	+ 0 05
				1835 — 1845 —	+ 0 27
5 Leonis ξ	(4191)	9 23 —	—		
22 Leo Min	(4213)	9 26 20 72	20 76		
10 Antl Pneum	(4253)	9 30 30 11	29 62		
16 Leonis ψ	(4287)	9 35 —	—		
Antl Pneum θ	(4301)	9 37 17 92	17 73		
66 Leonis	(4315)	9 39 1 38	1 37		
61 Sextant s	(4544)	10 6 1 80	2 62	P zi ass gns a P M	— 0 44
				P with 1835 gives	+ 0 23
				1835 — 1845 —	— 0 59
190 Camelop	(4587)	10 11 35 92	35 67	P with 1835 g es a P M	— 0 82
				1835 — 1845 —	— 0 57
34 Urs Maj μ	(4605)	10 13 —	—		
73 Leonis n	(5123)	11 7 —	—		
Navis	(5158)	11 11 0 41	—	Not obse ved befo e	
Navis	(5159)	11 11 6 31	—	Not observed before	
297 Urs Maj	(5357)	11 32 52 51	52 48		
449 Leonis	(5372)	11 34 11 70	12 00	Piazzi ass gns a P M	— 0 41
				P w th 1835 g ves	— 0 05
				1835 — 1845 —	— 0 35
Virgini	(5461)	11 47 28 06	28 40	Piaz assigns a P M	— 0 24
				P with 1835 g es	+ 0 11
				1835 — 1845 —	— 0 23
16 Virginis c	(5658)	12 12 —	—		

P as gns a P M — 0 20
P with 1835 gives + 0 05
1835 — 1845 — + 0 27

P zi ass gns a P M — 0 44
P with 1835 gives + 0 23
1835 — 1845 — — 0 59

P with 1835 g es a P M — 0 82
1835 — 1845 — — 0 57

Not obse ved befo e

Not observed before

Piazzi ass gns a P M — 0 41
P w th 1835 g ves — 0 05
1835 — 1845 — — 0 35

Piaz assigns a P M — 0 24
P with 1835 g es + 0 11
1835 — 1845 — — 0 23

MEAN DECLINATIONS OF STARS (*C i n u d*)

S	N M	M		1	REMARKS
		R	NT	V V	
D o	(4102)	+82	0 29 82	6 8	P wtl 1835 g es a P M + 0 61 1835 — 1845 — — 0 03
Pix Naut θ	(4112)	—25	18 29 10	27 65	P a i a P M + 0 50 P wtl 1835 i + 0 20 1835 — 1845 — + 0 07
5 Leo	(4191)	+11	58 59 72	59 4	The G ee wich C t logue f r 1840 10 error
22 Leo M	(4213)	+36	30 7 88	24 98	P wth 1835 g es a P M — 0 35 1835 — 1845 — — 0 06
10 Antl Pneum	(4253)	—31	29 2 5	1 84	P i z s b r P M + 0 57 P wth 1835 g c + 0 06 1835 — 184 — — 0 01
16 Leon s ψ	(4287)	+14	43 41 82	42 47	The Greenw h Catalogue for 1840 gives 39 04
Antl P eum θ	(4301)	—27	3 43 17	4 41	P i s g s a P M + 0 43 P with 1835 gives + 0 03 183 — 1845 — + 0 05
66 Leon s	(4315)	+21	19 9 27	9	P a z i a P M + 0 37 P wth 183 b v — 0 02 1835 — 1845 — — 0 00
61 S xtant	(4544)	— 6	37 9 21	10 42	
190 Camelop	(4587)	+83	20 31 52	31 40	
34 Urs M α μ	(4605)	+42	16 35 12	33 88	The G eenwich Catalogue for 1840 gives 27 49
73 Leo is n	(5123)	+14	9 8 36	9 43	The Green vich C talogue for 1840 gives 5 66 See errata
Na	(5158)	—58	21 42 63	41 74	
N s	(5159)	—58	23 25 63	24 51	Confirming the presume l e ror of B
297 Urs M j	(5357)	+35	4 36 36	35 01	P with 1835 gives a P M — 0 39 1835 — 1845 — — 0 26
449 Leonis	(5372)	+ 5	36 20 32	18 97	
V rg i	(5461)	+ 1	57 38 81	37 04	
16 Virg is c	(5658)	+ 5	10 35 61	40 50	The Obser ations furnishing this re ult were made in 1832 The G eenwich Observations for 1840 gives 34 36

MEAN RIGHT ASCENSIONS OF STARS (C n m d)						
S	N	M R sc		JAN 1		REMARKS
		R NT	V VI			
		OBS	(-)			
		h m				
8	Canum Ven d (5782)	12 26 22 27	22 00	Pa as gns P M		— 001
				P with 1835 g ves		— 072
				1835 — 1845 —		— 045
33	Vir gin (5869)	12 38 29 96	30 18			
43	Com Ber ω (6078)	13 4 38 01	38 25	Piaz as gn a P M		— 080
				P with 1835 g es		— 040
				1835 — 1845 —		— 064
61	Vir i (6123)	13 10 18 60	18 50	Pia i sig a P M		— 087
				P ith 1835 g e		— 067
				1835 — 1845 —		— 057
	Centauri (6180)	13 16 —	—			
	Centau i (6185)	13 17 —	—			
	Centau (6209)	13 19 —	—			
	Virgi is (6214)	13 20 19 66	19 72			
	Centauri (6281)	13 26 —	—			
	Cent u (6288)	13 27 52 70	52 69			
	Ce tau i (6297)	13 28 —	—			
82	Vir ginis m (6347)	13 33 29 03	28 94	Confir m g the P M		
	Cent uri (6363)	13 35 —	—			
438	U s M J (6405)	13 39 28 90	28 90			
	Centauri (6414)	13 40 —	—			
10	Draconis (6474)	13 46 54 23	54 35	P zz assig s a P M		— 032
				P w th 1835 g es		+ 027
				1835 — 1845 —		+ 015
	Camelop (6484)	13 47 3 83	2 92	P w th 1835		— 080
				1835 — 1845		+ 011
	Hyd æ (6485)	13 48 —	—			
	Centauri (6529)	13 53 —	—			
	D acon s (6543)	13 54 50 22	50 72			
	Centauri (6544)	13 55 26 57	26 95			
252	Can Ven (6560)	13 57 13 39	13 63			

MEAN RIGHT ASCENSIONS OF STARS (Continued)						
S	N	M		J		REMARKS
		R BS	NT TI	V (—)	V (—)	
		h	m			
630	Vrgi (6575)	13	58 48 22	48	08	
	Ce taur (6597)	14	2 26 70	—		(No 2566 of Vol V)
	V n (6624)	14	4 44 96	44	98	
	Centaur (6647)	14	8 7 66	8	49	
19	Booti λ (6666)	14	10 29 29	29	31	P a P M — 037 P w th 1835 g e — 012 1835 — 1845 — — 014
	Ce taur (6684)	14	12 5 20	5	38	
	Centau ι (6714)	14	14 35 52	35	09	
	Libræ (6721)	14	16 21 44	21	52	
	Hydæ (6736)	14	17 42 46	42	36	
	Centau (6735)	14	17 27 01	26	63	Confirming the presumed error of B
23	Bootis θ (6754)	14	19 55 24	55	06	P i assign P M — 053 P w th 1835 g es — 015 1835 — 1845 — — 017
	Lup (6784)	14	23 45 89	45	92	The Brisbane Catalogue states this Star to be double
	L libræ (6825)	14	28 45 65	45	37	P g P M — 030 P w th 1835 g e — 067 1835 — 1845 — — 039
	Lup (6833)	14	29 26 89	27	17	
	Ce taur (6843)	14	30 44 54	44	94	The Brisbane place is one minute in error
	Bootis λ (6861)	14	33 4 08	4	02	
	L libræ (6890)	14	37 24 06	24	27	
12	Hyd æ Con (6902)	14	38 42 82	42	70	P z assigns a P M — 029 P w th 1835 g e + 015 1835 — 1845 — + 027
	Lup (6959)	14	47 32 25	32	43	
	Quad Mur d (6991)	14	51 14 40	14	73	The Greenwich Catalogue for 1840 gives 14 11
	Lupi (7046)	14	58 —	—		No 5183 B is not now visible

MEAN DECLINATIONS OF STARS (Continued)						
S	N	M		S		REMARKS
		R	NT	V	VI	
630	Virgin	(6575)	—15 26 53 42	53 22		Piazzi assigns a P M — 0 38 P with 1835 g e + 0 01 1835 — 1845 — — 0 01
	Centauri	(6597)	—55 19 53 88	—		Not observed before
	Virginis	(6624)	— 2 34 32 10	32 98		P with 1835 g e a P M — 0 31 1835 — 1845 — — 0 22
	Centauri	(6647)	—58 37 24 12	20 05		Differences several seconds from B Cat a P M — 0 5 probably exit
19	Bootis λ	(6666)	+46 48 9 41	4 77		Piazzi assigns a P M + 0 27 P with 1835 g ves + 0 10 1835 — 1845 — + 0 56
	Centauri	(6684)	—55 14 59 34	57 77		Confirming the presumed error of B
	Centauri	(6714)	—36 44 20 69	—		Another Star observed (See errata)
	Librae	(6721)	—10 57 45 08	40 66		Greenwich Catalogue for 1840 gives 46 08
	Hydrae	(6736)	—26 9 17 87	—		Another Star observed by mistake in 183
	Centauri	(6735)	—38 8 57 29	53 00		
23	Bootis θ	(674)	+52 35 10 85	7 89		Piazzi assigns a P M — 0 54 P with 1835 g cs — 0 38 1835 — 1845 — — 0 08
	Lupi	(6784)	—45 46 32 02	32 51		This is B No 4956
	Librae	(6825)	—11 38 34 62	31 78		Piazzi assigns a P M + 0 34 P with 1835 g cs + 0 43 1835 — 1845 — + 0 15
	Lupi	(6833)	—45 37 29 41	28 88		Confirming the presumed error of B
	Centauri	(6843)	—39 56 8 98	9 33		Confirming the presumed error of B
	Bootis λ	(6861)	+45 4 34 84	32 87		Piazzi assigns a P M — 0 36 P with 1835 g cs + 0 03 1835 — 1845 — + 0 23
	Librae	(6890)	—20 30 52 31	51 73		Greenwich Catalogue for 1840 is 1 in error
12	Hydrae Con	(6902)	—25 26 0 52	1 41		
	Lupi	(6959)	—48 13 11 47	9 76		B Cat gives 13 2 24 there is probably a (—) P M
	Quadrant	(6991)	+50 15 53 71	50 71		The Greenwich Catalogue for 1840 gives 55 33
	Lupi	(7046)	—56 31 —	—		No 5183 B is not now visible

MEAN RIGHT ASCENSIONS OF STARS (Continued)						
S	N	M R		J 1 4		REMARKS
		Bm One	nt	V	VI (-0)	
		l m				
44	Bootis (7051)	14	58 40 51	40	97	Pazzi assigns a P M — 060 P with 1835 gives a P M — 022 1835 — 1845 — — 068
40	Urs Min (7065)	15	0 17 36	17	41	P with 1835 gives a P M — 074 1835 — 1845 — — 079
	Crucis (7089)	15	4 28 24	28	04	
	Lupi (7097)	15	5 8 93	8	37	
42	Urs Min (7115)	15	6 1 36	1	13	
	Librae (7167)	15	14 11 97	12	23	
15	Quad Mur (7174)	15	14 38 61	38	72	
	Librae (7246)	15	24 43 28	43	33	
36	Librae (7263)	15	25 14 35	14	11	
7	Cor Bor ζ (7316)	15	33 32 39	32	66	
	Serpenti (7391)	15	45 59 03	58	88	
41	Serpentis γ (7411)	15	49 17 62	17	46	
	Cor Bor φ (7451)	15	55 7 15	7	00	
14	Scorpi (7521)	16	2 59 79	59	80	
	Normae (7553)	16	7 8 87	9	94	See errata
	Normae (7588)	16	11 52 96	53	10	
21	Urs Min η (7658)	16	22 6 26	5	56	
15	Draconis A (7695)	16	28 18 66	17	72	
123	Scorpi (7714)	16	31 26 74	26	79	See errata
	Aræ (7726)	16	33 9 44	10	00	Observed only at one wire
40	Herculus ζ (7747)	16	35 26 56	26	60	

MEAN DECLINATIONS OF STARS (Continued)

S N		M D J 4		REMARKS
		R V VI		
		O		
44	Boots (7051)	+48 15 34 75	34 21	
40	Urs M (7065)	+72 22 15 84	15 53	
	Circin δ (7089)	—60 22 33 49	—	Not observed before
	L p (7097)	—47 29 26 30	27 88	Confirming the supposed error of B
42	Urs Min (7115)	+74 29 9 19	8 54	Piazzi assigns a P M — 0 30 P with 1835 gives + 0 18 1835 — 1845 — + 0 24
	Libra (7167)	—10 5 34 86	33 38	Piazzi assigns a P M + 0 50 P with 1835 gives — 0 14 1835 — 1845 — — 0 29
15	Quad Mur (7174)	+50 46 38 94	34 75	Greenwich Catalogue for 1840 gives 38 90
	Libra (7246)	—24 34 57 08	57 58	Confirming the supposed error of B
36	Libra (7253)	—27 31 12 07	12 63	See errata
7	Cor Bor ζ (7316)	+37 8 31 08	30 01	Piazzi assigns a P M — 0 40 P with 1835 gives — 0 09 1835 — 1845 — + 0 01
	Serpentis (7391)	+23 41 9 20	8 58	Piazzi assigns a P M — 0 16 P with 1835 gives — 0 70 1835 — 1845 — — 0 64
41	Serpentis γ (7411)	+16 10 16 69	16 92	P with 1835 gives a P M — 1 30 1835 — 1845 — — 1 28
	Cor Bor φ (7451)	+33 46 27 79	27 04	P with 1835 gives a P M — 0 73 1835 — 1845 — — 0 67
14	Scorpius (7521)	—19 3 9 47	3 00	This extraordinary difference merits particular attention Greenwich Cat 1840 gives 3 10 70
	Normæ (7553)	—49 1 30 17	—	See errata
	Normæ (7588)	—54 50 51 88	52 15	See errata
21	Urs Min η (7658)	+76 6 37 58	32 26	Greenwich Catalogue for 1840 gives 34 81
15	Draconis A (7695)	+69 6 12 49	8 48	Greenwich Catalogue for 1840 gives 11 92
128	Scorpius (7714)	—20 6 1 93	55 80	Piazzi assigns a P M — 0 09 P with 1835 gives + 0 17 1835 — 1845 — — 0 44
	Aræ (7726)	—58 12 25 04	—	Not observed before
40	Herculus ζ (7747)	+31 53 13 48	9 56	Greenwich Catalogue for 1840 gives 12 86

MEAN RIGHT ASCENSIONS OF STARS (Continued)									
S	N	M	R		Asc		J	REMARKS	
			O	B	NT	V			V
			h		m				
Scorpi	ζ	(7810)	16	43	41	62	41 16		
Ophiuch		(7879)	16	52	27	17	26 86		
Aræ		(7906)	16	56	8	72	8 95		
Dr conis	R	(7915)	16	56	31	13	30 88		
34 Oph uchi		(7917)	16	56	50	04	50 46		
22 U s Min		(7959)	—	—	—	—	—		
53 Serpentis	γ	(8016)	17	12	6	73	6 69		
Herculis	ω	(8042)	17	14	51	54	51 59		
Ophiuchi		(8048)	17	15	28	47	28 56		
33 Scorpi		(8049)	17	15	38	31	37 98		
34 Scorp i		(8079)	17	20	14	14	13 57		
24 Dracon s		(8147)	17	29	7	57	7 69		
Hercul s		(8173)	17	32	28	97	28 65		
141 Draco s		(8182)	17	33	23	91	23 35		
Aræ		(8214)	17	37	52	15	52 56		
87 Herculs		(8252)	17	42	31	90	32 13		
Sagittar		(8322)	17	52	31	31	31 28		
Telescop i		(8366)	—	—	—	—	—		
Dracon		(8371)	17	56	23	89	22 53		
70 Ophiuchi P		(8372)	17	57	37	37	37 31	A small Star (7.8 mag) follows this at 37 30 about 3 2 to the South	
34 Dracon s ψ		(8379)	17	57	52	20	51 25	Only one doubtful observation in 1835	
Telescopu		(8445)	18	10	8	90	9 52		

MEAN DECLINATIONS OF STARS (C t nued)

S	N	J		REMARKS
		M	V V	
Scorpi ζ	(7810)	—42 5 21 15	22 5	P with 1835 g ves a P M — 0 35 1835 — 1845 — — 0 21
Ophiocl	(7879)	—13 19 5 41	6 85	P with 1835 es P M — 0 37 1835 — 1845 — — 0 23
As	(7906)	—46 27 49 67	46 91	B C t l ue e 56 12 1
Dracon R	(7915)	+56 55 4 94	9 76	P with 183 g e a P M + 0 43 1835 — 1845 — — 0 05
31 Ophiuchi	(7917)	+13 49 4 70	—	Not ob v d bef c
22 Ur M	(7959)	— — —	—	
53 Serpentes γ	(8016)	—12 41 1 14	2 89	Pia i s gns a P M + 0 48 P with 1835 g e — 0 04 1835 — 1845 — + 0 13
Herculs	(8042)	+32 40 14 57	15 85	P with 1835 g es a P M — 1 00 1835 — 1845 — — 1 13
Ophiuchi	(8048)	— 9 1 23 43	23 03	Greenw l C t 1840 g e 26 36
33 Scorj	(8049)	—24 5 44 97	41 50	Greenw cl Cat 1840 gives 44 94
34 Scorpi	(8079)	—37 9 53 76	55 15	Greenwicl C talogue g ves 48 06 the alt tude at Green vich is only 1 20
24 Dracon s	(8147)	+55 17 28 97	30 80	Greenwicl Cat 1840 g ves 27 20
Hercul	(8173)	+48 3 34 36	29 51	P with 1835 g es P M — 0 32 1835 w th 1845 — + 0 16
141 Dracon s	(8182)	+61 59 36 98	42 30	P z as g P M — 0 40 P with 1835 — 0 39 1835 — 1845 — — 0 92
Arm	(8214)	—53 33 10 28	—	See er ata
87 Hercules	(825)	+25 40 42 31	39 68	See e rata
Sagittari	(83 2)	—22 46 11 69	16 78	Green h C talogue 1840 gives 12 78
Telescop	(8366)	—22 36 53 50	53 52	Co firming the presumed erro of B
Draconis	(8371)	+76 58 43 20	42 84	P a gn a P M + 0 60 P with 1835 g ves + 0 24 1835 — 1845 — + 0 27
70 Ophiuchi P	(8372)	+ 2 32 30 79	30 08	P with 1835 g ves a P M — 1 02 1835 — 1845 — — 1 09
34 Draconis γ	(8379)	+72 1 5 62	7 55	
Telescopu	(8445)	—36 50 0 87	0 97	Co firming the presumed erro of B

MEAN RIGHT ASCENSIONS OF STARS (Continued)										
S	N	M	R		J	84	REMARKS			
			O	R				NT	V	VI
			h	m						
U s M	(8535)	18 20	—	—	—					
Telescopu	(8551)	—	—	—	—					
44 Draconis γ	(8547)	18 23 50	71	50 72		P with 1835 g es a P M	— 119			
		1835 — 1845	—	—	—	—	120			
82 Ur Min	(8587)	18 28 4	40	4 30						
Telescop	(8689)	—	—	—	—					
63 Serpentis θ	(8701)	18 48 30	88	30 94						
Telescopu	(8712)	—	—	—	—					
Dr conis	(8724)	18 51 14	36	13 89		P with 1835 g es a P M	+ 084			
		1835 — 1845	—	—	—	+	131			
Co Aust γ	(8757)	18 55 56	44	56 37						
S g ttari	(8771)	18 57 45	38	45 06						
41 Sagittarii π	(8791)	19 0 32	78	32 45						
S gittari	(8861)	19 10 9	96	9 55						
Sa ttarii	(8874)	—	—	—	—					
S g tta u	(89 3)	19 17 22	04	21 63						
3 Sagittæ	(8930)	19 17 47	30	47 32						
Pavo is	(8933)	—	—	—	—					
61 Dr conis	(9046)	19 32 39	07	38 74		Pazz ass g i a P M	+ 085			
		1835 — 1845	—	—	—	+	107			
						+	140			
Draconis	(9064)	19 35 57	85	57 35						
Aquilæ	(9139)	19 44 47	84	48 11						
2 Draconis	(9168)	19 48 40	12	40 31						

P with 1835 g es a P M — 119
1835 — 1845 — — 120

P with 1835 g es a P M + 084
1835 — 1845 — + 131

Pazz ass g a P M + 085
P with 1835 g es + 107
1835 — 1845 — + 140

MEAN DECLINATIONS OF STARS (*C ntinued*)

S	N	MRA D		REMARKS
		R O	V V	
U s Min	(8535)	+85 39 50 57	—	One obse to in 1835 differ 30
Telescopu	(8551)	—59 14 21 80	20 86	B C talogue is 5 n error
44 Draconis χ	(8547)	+72 39 50 12	52 12	
82 U s Min	(8587)	+86 58 11 99	28 05	A wrong Sta ppear to have been obse ed in 1835
T lescopu	(8689)	—55 13 8 73	5 61	B C t logue g es 12 59 86 the e s prob bly a (—) P M of 4 o 5
63 Sc le tis θ	(8701)	+ 4 0 23 78	22 98	Pia i g is P M + 0 32 P w th 1835 g es — 0 02 1835 — 1845 — + 0 06
Telescopu	(8712)	—58 8 1 21	0 38	Confirming the presumed error of B
Dracon s	(8724)	+74 32 18 41	18 20	
Cor Aust γ	(8757)	—37 16 45 37	44 37	P w th 1835 g es a P M — 0 34 1835 — 1845 — — 0 44
Sag ttar i	(8771)	—28 52 11 00	9 63	Pi g s P M — 0 31 P w th 1835 g es + 0 01 1835 — 1845 — — 0 13
41 Sa ttaru π	(8791)	—21 15 52 83	48 68	Greenwich Cat for 1840 g e 51 82 P vitl 1835 g ves a P M + 0 01 1835 — 1845 — — 0 40
Sag ttaru	(8861)	—15 48 3 33	1 12	P ssigns a P M — 0 54 P w th 1835 g es — 0 20 1835 — 1845 — — 0 38
Sagitta u	(8874)	—22 41 6 58	6 88	B Catalogue g es 11 80
Sa ttaru	(8923)	—15 21 19 19	15 02	Greenw ch Cat fo 1840 g 18 20
3 Sag ttæ	(8930)	+16 39 29 37	34 51	Greenwich C t fo 1840 g es 29 25
Pavonis	(8933)	—60 34 57 08	54 78	Confirming the presumed eiro of B
61 Draconis	(9046)	+69 23 53 08	52 02	P zz ass gns P M — 2 12 P with 1835 g e — 1 70 1835 — 1845 — — 1 65
Draconis	(9064)	+69 26 58 44	—	See er at
Aquilæ	(9139)	+11 14 57 59	56 69	P w th 183 g es a P M — 0 42 1835 — 1845 — — 0 33
2 Draconis	(9168)	+69 52 23 49	23 00	Pazz as igns a P M — 0 30 P with 1835 gives + 0 09 1835 — 1845 — + 0 14

MEAN RIGHT ASCENSIONS OF STARS (Cont nu d)					
S N		M R		J	REMARKS
		R NT DS	V V (-)		
		h m			
12	Sagittæ γ (9188)	19 51 51 77	51 79		
	Sag ttar α (9203)	19 53 44 65	44 15		
	Telescop α (9222)	19 56 18 90	18 73		
349	S gitta (9255)	20 0 29 92	30 07		
	Sag ttar η (9260)	20 1 0 49	0 22	P th 1835 g a P M 1835 — 1845 —	+ 043 + 070
24	Ce η he (9297)	20 3 53 26	53 13	P gn P M P w tl 1835 g e 1835 — 1845 —	— 055 + 066 + 079
	Sag tt α (9303)	20 5 36 91	36 30	Pia z s g a P M P v th 1835 g 1835 — 1845 —	+ 083 + 062 + 123
	Cephei (9376)	20 13 14 63	15 56	P w th 1835 g e P M 1835 — 1845 —	+ 103 + 010
1	Cepl (9383)	20 14 0 01	0 26	P i a signs a P M P w tl 1835 g 1835 — 1845 —	— 053 + 081 + 056
	Cephe (9438)	20 20 55 51	55 96	P w tl 1835 g P M 1835 — 1845 —	+ 093 + 045
	C p co n α (9433)	20 20 59 32	59 07		
12	Cap co (9434)	20 21 0 55	0 29		
	Ant α o (9439)	20 21 51 44	51 38		
2	Ceph θ (9488)	20 26 58 39	58 38	P signs P M P w th 1835 giv 1835 — 1845 —	— 024 + 019 + 020
16	Caprico n ψ (9575)	20 36 54 81	54 60		
	M c oscop (9584)	20 37 —	—		
279	D aco n (9589)	20 37 41 96	42 45	See er at	
	Delph η η (9627)	20 42 14 66	14 49		
3	Cephei η (9629)	20 42 7 78	7 13		
	Cephe (9634)	20 43 20 51	19 93	See e ata	
	Microscop μ (9666)	20 46 —	—		

MEAN DECLINATIONS OF STARS (<i>Cont nued</i>)						
S	N	M D		J	84	REMARKS
		R		V	VI	
		O				
12	Sagittæ γ	(9188)	+19 4 28 98	28 98		P a sign a P M + 0 28 P w th 1835 g es — 0 09 1835 — 1845 — — 0 09
	Sag ttar i	(9203)	—38 17 16 75	17 01		P w th 1835 gives a P M — 0 38 1835 — 1845 — — 0 35
	Telescopu	(9222)	—53 0 58 43	58 63		See errata
349	Sagittaru	(9255)	—21 2 18 13	15 86		P ass gns a P M — 0 41 P with 1835 g ves — 0 03 1835 — 1845 — — 0 26
	Sagittaru j	(9260)	—36 29 7 03	7 37		P w th 1835 g e a P M — 1 63 1835 — 1845 — — 1 60
24	Cephei	(9297)	+76 2 47 60	47 46		
	Sag ttaru r	(9303)	—27 29 26 91	24 34		Piazzi ass gns a P M + 0 76 P with 1835 g es — 0 23 1835 — 1845 — — 0 49
	Cephei	(9376)	+77 21 35 61	35 82		
1	Cephei	(9383)	+77 14 31 80	32 29		
	Cephei	(9438)	+77 32 2 24	2 11		
	Capricorni α^1	(9433)	—19 5 40 71	41 97		See errata
12	Capricorni α^2	(9434)	—19 5 28 40	29 45		See errata
	Antnoi	(9439)	— 4 56 49 45	51 79		See errata
2	Cephei θ	(9488)	+62 28 26 84	29 39		
16	Capricorni ψ	(9575)	—25 49 24 26	20 63		Greenwich Catalogue for 1840 gives 24 03
	Microscopu	(9584)	—44 32 54 79	52 26		Confirming the presumed error of B
279	Draconis	(9589)	+80 53 14 49	17 51		See errata
	Delphini ϕ	(9627)	+11 58 9 92	10 45		P M erroneous in Vol III
3	Cephei j	(9629)	+61 14 17 61	16 61		See errata
	Cephei	(9634)	+54 59 55 50	53 14		
	Microscopu μ	(9666)	—44 40 38 73	41 81		Confirming the presumed error of B

MEAN RIGHT ASCENSIONS OF STARS (Continued)				
S	N	M R A		JAN 1 4
		R	NT	
		Obs		V VI (-0)
		h m		
Microscopu	(9689)	20	49 —	—
Ind	(9710)	20	52 —	—
22 Capricorn	(9740)	20	55 34 77	34 57
3 P scis Aust	(9818)	21	4 5 50	4 97
Cephei w	(9863)	21	8 29 16	30 05
Capricorn	(9947)	21	19 22 84	22 61
129 Capricorni	(9978)	21	22 43 07	42 80
Aquaru	(9999)	21	25 37 51	37 39
Indi	(10050)	21	31 —	—
I di	(10056)	21	31 —	—
Indi	(10073)	21	33 25 38	24 95
45 Capricorni d ³	(10087)	21	35 33 04	32 86
11 Cephei	(10128)	21	39 37 72	37 78
Indi	(10200)	21	51 27 49	27 12
Indi K	(10226)	21	54 —	—
Indi	(10234)	21	55 —	—
P scis Aust	(10257)	21	59 —	—
174 Cephei	(10272)	22	0 22 51	22 28
Grus	(10305)	22	5 9 46	9 41
Lacertæ m	(10326)	22	7 13 86	13 97

REMARKS

Piazzi assigns a P M — 073
P with 1835 give — 003
1835 — 1845 — + 050

P with 1835 gives a P M + 072
1835 — 1845 does not confirm this P M

P assign a P M + 003
P with 1835 gives + 043
1835 — 1845 — + 037

B with 1835 gives a P M + 400
1835 — 1845 — + 437

Piazzi assigns a P M + 047
P with 1835 gives + 008
1835 — 1845 — + 031

MEAN DECLINATIONS OF STARS (*Continued*)

S	N	M A N D C L T I		J A N 45		REMARKS
		B Obs	NT TI	V	VI	
Microscop i	(9689)	—43	36 42 08	45	63	Confirming the presumed error of B
Ind	(9710)	—59	32 17 14	17	19	Confirming the presumed error of B
22 Capricorni η	(9740)	—20	27 49 92	46	52	Greenwich Catalogue for 1840 gives 49 81
3 Piscis Aust	(9818)	—28	14 53 39	59	88	Piazzi assigns P M — 0 11 P with 1835 gives — 0 11 1832 — 1845 — + 0 39
Cephe w	(9863)	+77	29 47 50	48	89	
Capricorni	(9947)	—22	23 6 24	6	42	P with 1835 gives a P M — 0 31 1835 — 1845 — — 0 30
129 Capricorni	(9978)	—19	54 54 45	51	80	Piazzi assigns a P M — 0 29 P with 1835 gives + 0 08 1835 — 1845 — — 0 20
Aquari	(9999)	— 6	6 1 25	5	10	P with 1835 gives a P M — 0 43 1835 — 1845 — — 0 04
Indi	(10050)	—58	18 46 57	49	10	Confirming the presumed error of B
Indi	(10056)	—50	47 41 13	41	23	Confirming the presumed error of B
Indi	(10073)	—56	10 38 87	37	10	Confirming the supposed error of B
45 Capricorni d^3	(10087)	—15	27 24 21	25	29	Piazzi assigns a P M + 0 32 P with 1835 gives — 0 10 1835 — 1845 — + 0 01
11 Cephei	(10128)	+70	35 55 25	55	32	
Indi	(10200)	—57	25 6 91	6	50	B with 1835 gives a P M — 2 90 1835 — 1845 — — 2 94
Indi K	(10226)	—60	22 55 78	55	38	See errata
Indi	(10234)	—59	52 46 89	49	49	Confirming the presumed error of B
Piscis Aust	(10257)	—34	47 46 69	47	04	Confirming the presumed error of B
174 Cephei	(10272)	+61	31 37 62	39	71	
Grus	(10305)	—42	6 49 50	46	57	P with 1835 gives a P M — 0 60 1835 — 1845 — — 0 89
Lacertæ m	(10326)	+38	56 53 02	52	66	Piazzi assigns a P M — 0 80 P with 1835 gives — 0 05 1835 — 1845 — — 0 01

MEAN RIGHT ASCENSIONS OF STARS (Continued)							
S	N	M	M R		J	84	REMARKS
			R CENT				
			O		V	VI	
					(-0)	
			h	m			
43	Aquari	θ	(10336)	22 8 39 21	39 11		
	Grus	π	(10359)	22 18 14 30	14 13		
	Grus		(10408)	22 19 33 39	32 90		
35	Pegasi	H ³	(10407)	22 20 0 75	0 85		
57	Aquari		(10423)	22 22 26 62	26 35		
	Cephei	C	(10447)	22 25 28 95	28 91	P a z i assigns P M — 037 P with 1835 g e + 033 1835 — 1845 — + 037	
59	Aquari		(10450)	22 26 12 71	12 32		
	Cephei	ρ	(10469)	22 26 27 18	27 30		
18	Piscis Aust		(10486)	22 32 4 63	4 24		
	Grus		(10501)	22 33 —	—		
	Lacertæ		(10524)	22 36 50 75	51 12		
	Grus		(10527)	22 36 —	—		
	Pegasi		(10538)	22 38 21 26	21 21		
	Aquari		(10541)	22 39 50 43	50 74		
	Cephei		(10562)	22 44 9 27	9 55	P with 1835 g i es a P M + 074 1835 — 1845 — + 046	
246	Cephei		(10580)	22 47 55 83	56 38	P with 1835 g es P M + 071 1835 — 1845 — + 016	
	Cephei	T	(10621)	22 55 25 52	25 29	P with 1835 g ve P M + 117 1835 — 1845 — + 140	
	Grus		(10669)	23 3 54 68	54 39		
	Tucanæ		(10685)	23 7 24 61	24 55		
	Grus		(10702)	23 10 4 51	4 49		

MEAN DECLINATIONS OF STARS (Continued)

S N		M D CLM		J 1 5		REMARKS
		RSC NT Obs		V V		
43	Aquari θ	(10336)	— 8 33 9 31	6 97		Greenw h C t l gue f r 1840 gi es 10 58
	Gru π^1	(10359)	—46 4 35 91	35 54		Confir ming the pre umed error of B
	Gruis	(10403)	—39 54 50 27	52 09		P w th 1835 g es a P M. — 0 31 1835 — 1845 — — 0 13
35	Pegasi H ²	(10407)	+ 3 55 13 98	14 34		P th 1835 g es a P M — 0 40 1835 — 1845 — — 0 44
57	Aquari	(10423)	—11 28 8 48	0 89		P w th 1832 g es a P M — 0 05 1835 — 1845 — — 0 64 Greenw ch Catalogue f 1840 gi es 5 84
	Cephei C	(10447)	+77 59 47 15	46 63		
59	Aquari	(10450)	—21 30 0 44	59 25		Piazzi s g s P M — 0 46 P w th 1835 gi es — 0 15 1835 — 1845 — — 0 27
	Cephei ρ	(10469)	+78 1 48 39	45 53		P i g P M — 0 21 P w th 1835 g es + 0 08 1835 — 1845 — + 0 36
18	Piscis Au t	(10488)	—27 51 1 84	57 94		Greenw cl C talogue for 1840 gve 1 58
	Gruis	(10501)	—45 3 28 82	29 34		C nf m ng the presumed e ror of B
	Lacertæ	(10524)	+43 43 8 31	—		The wro g Sta appea s t ha e bec obe ed n 1835 nd the p esent determi ation diffe s 3 from Piazz
	Gruis	(10527)	—50 29 20 42	14 61		B Cat g ves 1 56 or it appears that there s a P M of — 1 0
	Pegasi	(10533)	+29 38 38 79	36 62		P w th 1835 g ves a P M — 0 37 1835 — 1845 — — 0 15
	Aquari	(10541)	— 5 1 54 53	56 01		P with 1835 g s a P M — 0 37 1835 — 1845 — — 0 22
	Cephei	(10562)	+82 27 17 14	18 87		
246	Cephei	(10580)	+82 19 54 43	54 01		
	Cephei T	(10601)	+83 30 57 58	59 69		
	Gruis	(10669)	—55 1 40 80	40 74		Confirming the presumed error of B
	Tucanæ	(10685)	—56 22 19 28	15 7		Differs se eral second f om B
	Gruis	(10702)	—48 16 54 87	53 07		Confirm ng the presumed error of B

MEAN RIGHT ASCENSIONS OF STARS (Continued)				
S	N M	M J 1		REMARKS
		O NT	V V (-)	
		h m		
8	Piscium 1 (10764)	23 18 59 26	59 37	Pazz a g s P M — 018 P with 1835 g es + 020 1835 — 1845 — + 009
	Cephei V (10820)	23 7 49 00	—	Compared to P a the P M comes out + 02 Observations discordant
104	Aquarii A (10852)	23 33 —	—	
	Phœnicis (10860)	23 35 38 9	38 45	
3	Messori (10918)	23 44 54 97	54 79	P with 1835 gives a P M + 090 1835 — 184 — + 108
	Phœn c s (10924)	23 45 15 94	15 80	
	Cassiopeiæ σ (10959)	23 51 10 53	10 62	
	P scium (10963)	23 51 43 47	43 84	
85	Pega 1 (10980)	23 54 4 98	5 08	Pazz a g s P M + 060 P with 1835 g es + 072 1835 — 1845 — + 062
MEAN DECLINATIONS OF STARS (Continued)				
S	N M	M D M J		REMARKS
		Ons	V VI	
8	Piscium 1 (10764)	+ 0 24 26 48	28 40	
	Cephei V (10820)	+ 86 27 8 34	9 33	
104	Aquarii A (10852)	— 18 40 34 35	32 19	See errata
	Phœnicis (10860)	— 46 19 11 98	9 75	The B Catalogue gives 19 1 54 there is probably a (—) P M
3	Messoris (10918)	+ 74 40 50 00	49 43	
	Phœnic s (10924)	— 49 47 48 59	50 51	Confirming the presumed error of B
	Cassiopeiæ σ (10959)	+ 54 53 32 71	32 83	Differing 20 from Greenwich Catalogue for 1840
	Piscium (10963)	— 6 45 12 45	12 68	Paz i signs P M + 0 36 P with 1835 g ves — 0 03 1835 — 1845 — — 0 01
85	Pegasi (10980)	+ 26 15 42 41	41 87	* See errata

NORTH POLAR DISTANCES
OF
THE PLANET MARS,
AND OF
STARS SITUATED NEAR TO HIS PATH,
AT THE SEVERAL OPPOSITIONS
BETWEEN 1831 AND 1847
OBSERVED AT THE MADRAS OBSERVATORY

MADRA MEAN TIME	NAMES	B R.	RM		OBSER N P D	MA RA M T	N MES	B	RM R-		OBSER N P D
			IN	UT						UT	
1832 d. h m		In hes				1832 d h m		I h			
No 9 12 44 5	A Turi	30 112	77 6	76 2	68 26 31 9	Dec 17 9 27 8	♂ Center	30 152	75 0	71 7	70 9 54 1
	♂ Center	30 112	77 6	76 2	69 1 52 7		Taur	30 144	74 5	71 0	73 54 37 0
	53 T u i				69 19 47 3						
	Tauri	30 100	77 0	75 8	73 53 36 8		38 A etis				70 10 37 9
	b Tauri				69 11 42 0	18 9 23 5	♂ Ce ter	30 128	76 3	74 8	70 10 13 4
15 12 11 6	♂ Center	30 150	78 0	76 5	69 8 8 4		α Taur	30 108	75 0	71 4	73 54 38 5
	53 T u r i				69 17 45 2	20 9 15 0	♂ Center				70 13 15 4
	Tauri	30 130	78 0	76 2	73 51 3 8		65 A etis	30 108	77 0	76 2	69 55 14 6
	b Tauri				69 11 42 0		Tauri				73 57 29 8
16 12 6 1	♂ Center	30 142	76 9	74 3	69 9 56 6	21 9 10 9	♂ Cente	30 066	77 0	76 0	70 13 2 7
	α Tau	30 126	76 7	73 6	73 51 33 4		65 A et s				69 55 14 3
	♂ Center				69 11 49 3		Tau	30 072	76 3	73 6	73 57 30 1
17 12 0 0	A Tau i	30 112	7 8	71 8	68 24 31 4	22 9 6 8	♂ Center	30 028	77 3	76 7	70 12 44 8
	♂ Center				69 22 30 3		65 A t s				69 55 13 5
22 11 32 9	b T u	30 110	75 3	72 0	69 11 40 3		Tauri	30 028	77 0	76 0	73 57 29 9
	A T	30 110	75 2	72 0	68 4 29 0	24 8 58 7	♂ Ce ter	30 012	75 9	75 8	70 11 36 5
	α Tau i	30 102	75 0	71 8	73 51 33 5		65 A t s				69 55 15 1
	♂ Center				69 38 59 4		Tauri	30 016	76 0	75 3	73 57 30 3
29 11 55 1	Tauri	30 128	77 0	76 2	73 51 32 5	25 8 54 8	♂ Center	30 030	75 9	74 9	70 10 46 6
	65 Ar et s				69 49 17 9		65 A t i s				69 55 14 1
30 10 49 8	♂ Center	30 114	77 0	76 8	69 41 20 3	1834	Tauri	30 032	75 9	74 8	73 57 32 0
	65 Arctus				69 52 42 6	Dec 23 13 1 5	(P) an th f l	30 120	74 9	72 1	64 3 13 8
Dec 4 10 29 2	♂ Center	30 128	77 4	76 4	69 53 26 0		♂ N L				63 56 14 0
	T u r	30 110	77 5	75 5	73 54 59 8		♂ S L				63 56 31 8
	♂ C te				69 55 26 6	24 12 55 9	40 Geminor	30 112	77 3	76 9	63 54 55 8
5 10 24 2	Tau i	30 156	77 7	77 0	73 54 59 6		♂ N L	30 112	77 2	76 8	63 51 35 2
	65 A r et s				69 52 42 7		♂ S L				63 51 53 3
6 10 10 2	♂ Ce ter	30 170	77 8	76 4	69 57 20 5	25 12 50 3	♂ N L	30 102	77 7	77 8	63 47 2 8
	F T u				70 55 27 0		♂ S L				63 47 20 9
	α Tauri	30 144	77 0	73 4	73 55 0 9	26 12 44 7	40 Gem o	30 114	78 0	76 2	63 54 53 6
	65 Ar et i				69 50 46 9		♂ N L				63 42 36 7
7 10 14 2	♂ Ce te	30 112	76 9	75 9	69 57 10 8		♂ S L				63 42 55 1
	F T u i				70 53 31 5	27 12 39 1	40 Gem or	30 130	76 4	74 0	63 54 55 9
	α Tauri	30 099	76 5	75 5	73 53 3 1		♂ N L				63 38 21 3
12 9 50 3	♂ Center	30 118	78 1	76 8	70 4 38 2		♂ S L				63 38 35 0
	T u i	30 110	77 9	77 0	73 53 15 9		s Geminor	30 128	75 6	73 0	63 35 7 8
	38 Ar et s				70 9 14 3	28 12 33 4	40 Gem or	30 110	76 9	76 3	63 54 55 4
13 9 45 7	♂ Ce ter	30 144	77 5	7 8	70 5 43 1		♂ N L				63 34 10 5
	T u i	30 180	77 0	73 0	73 53 15 8		♂ S L				63 34 28 7
	38 A et s				70 10 35 8	29 12 27 7	♂ C te	30 098	75 0	72 7	63 30 18 2
15 9 36 7	♂ Center	30 100	75 5	71 1	70 8 47 1		s Geminor				63 35 7 9
	Tau	30 076	74 4	69 3	73 54 36 6	30 12 22 0	39 Gem no	30 112	74 2	69 8	63 45 20 6
	38 A et s				70 10 35 7		♂ N L				63 26 18 2
16 9 31 2	♂ Center	30 136	76 4	75 6	70 9 23 8		♂ S L				6 6 34 4
	Tau i	30 120	75 7	73 0	73 54 37 5		Geminor				63 22 33 5

M M	N M	B no	T		O N P D	M M E A T	N M S		T		Obs N P
				UT						UT	
1834 d 1 m De 31 12 16 3	♂ C i ter (t)	I 1 30 074	75 6	72 0	63 22 43 8 63 22 34 5	1835 d 1 m	43 Au gæ (B)	I 1 os 30 130	75 8	74 9	62 46 44 6 62 47 1 9 62 46 28 8
1835	()	29 992	73 2	68 3	63 14 52 9 63 15 51 7 62 55 34 4	J n 22 10 16 4	♂ Ce ter				
Ja 2 12 4 9	♂ Center 47 G m or						43 Aur gæ (C)	30 170	76 9	76 0	62 46 42 7 62 51 12 6 62 50 40 2
3 11 59 2	♂ Cente 47 G i or	30 032	72 0	68 2	63 12 40 8 62 55 34 3	30 9 38 3	♂ Ce ter				
4 11 53 5	♂ Cente (w) 47 Ge or	30 024	70 8	66 9	63 9 41 7 63 6 56 0 62 55 35 7	31 9 33 8	♂ C ter (C)	30 194	77 0	76 5	62 46 43 2 62 51 12 6 62 51 35 3
5 11 47 8	♂ Center (w) 47 Geminor	30 018	73 0	72 7	63 6 52 2 63 6 56 7 62 55 33 9	Feb 1 9 29 4	♂ C te (C)	30 192	74 8	71 6	62 46 44 0 62 51 12 9 62 52 32 2
6 11 42 2	♂ Center (w)	30 076	74 0	70 5	63 4 14 8 63 6 58 6	2 9 25 0	♂ Ce ter	30 178	74 0	72 8	62 53 37 4
8 11 31 0	54 Au igæ ♂ Center (x)	30 150	74 8	73 9	61 38 41 7 62 59 35 7 62 57 39 0	4 9 16 5	♂ Center (A) 49 Aurigæ	30 114	73 8	71 7	62 55 49 5 62 58 45 4 61 54 9 7
9 11 25 4	54 Aurigæ ♂ Cente	30 118	73 3	70 9	61 38 43 1 62 57 30 8	5 9 12 3	♂ C nter (A) 49 Au gæ	30 156	75 9	76 0	62 57 0 9 62 58 44 8 62 54 11 8
12 11 8 9	♂ Center (j)	30 062	71 3	69 2	62 52 25 1 62 51 49 1	7 9 4 1	♂ Center (A)	30 174	77 8	77 7	62 59 30 2 62 58 44 6
13 11 3 4	* ♂ Center (j)	30 036	70 0	66 7	62 49 8 0 62 51 10 7 62 51 48 6	10 8 52 3	♂ Cente (A)	30 164	77 0	77 8	63 3 31 7 62 58 44 0
14 10 58 0	♂ Center (y)	30 054	71 5	69 0	62 49 7 6 62 49 59 8 62 51 49 7	1837 Jan 26 13 16 7	♂ Center (x) η Leo is	30 050	71 2	66 7	71 20 33 5 71 12 12 4 72 27 37 1
15 10 52 6	♂ Center (z) (y)	30 058	70 9	69 5	62 49 3 8 62 49 9 8 62 51 50 6	27 13 11 4	♂ Center (w) η Leo is	30 066	71 0	67 0	71 8 54 7 71 12 27 0 72 27 37 9
16 10 47 3	♂ Center (j)	30 076	73 3	70 4	62 48 14 8 62 49 8 4 62 51 49 5	28 13 6 0	♂ Center (p) η Leonis	30 096	74 0	71 7	71 0 42 4 71 4 18 1 72 27 38 3
18 10 36 8	♂ Center (y)	30 094	71 7	68 8	62 47 10 6 62 51 49 6	29 13 0 6	♂ Center (q) η Leonis	30 128	75 2	73 7	70 53 21 5 70 56 11 9 72 27 36 2
19 10 31 6	♂ Center (B)	30 098	72 6	69 8	62 47 1 6 62 46 42 2	31 12 49 6	♂ Center (t) η Leonis	30 110	74 8	71 0	70 40 3 6 70 35 5 2 72 27 37 6
20 10 26 5	♂ Center	30 080	72 7	70 6	62 46 29 7	Feb 2 12 38 6	♂ Center (k) η Leonis	30 100	73 5	68 6	70 15 20 8 70 24 10 3 72 27 37 6
21 10 21 4	43 Aurigæ * ♂ Center (B)	30 082	75 3	75 3	62 46 45 4 62 47 0 8 62 46 25 7	3 12 33 2	♂ Cente (k) η Leonis	30 144	75 6	70 6	70 15 9 5 70 16 22 2 72 27 37 9
								30 126	74 7	70 0	
								30 124	74 5	69 7	

M RA M	N M S			O N P D	M RA M	N M S		T	N
1837 d l m		I hes			1837 d h m		l l		
F b 4 12 27 6	♂ Center (d)	30 114	75 0	73 0	70 1 18 1	γ C c	30 186	78 1	75 0
		30 102	74 0	72 3	70 8 40 1	♂ Ce t	30 184	77 9	76 2
						(f)			
	♂ C nc	30 032	74 2	70 6	71 15 58 6	γ C ncr	30 044	78 0	75 3
5 12 22 1	♂ Cente ()	30 010	74 0	69 7	70 1 6 5	♂ Ce te (b)			
	♂ Ca c i	30 024	74 2	71 7	71 15 58 5	γ C nc	30 034	77 9	74 3
6 12 16 6	♂ Cente (n)	30 020	74 0	70 0	69 50 39 1	♂ C t			
					69 53 41 3				
	♂ Ca i	30 072	76 0	74 3	71 15 58 7	γ Canc	30 078	78 2	74 8
7 12 11 1	♂ Ce ter ()	30 064	75 8	73 7	69 46 25 0	♂ Cent (a)			
					69 41 21 2				
	♂ C n r	30 116	76 0	74 3	71 15 59 2	γ C ncr (a)	30 116	78 2	77 3
8 12 5 5	♂ Ce ter 1141A S C	30 084	76 0	73 7	69 31 41 9	♂ Center			
					69 39 19 4				
	♂ C	30 094	75 3	72 0	71 15 58 8	γ Cancr (a)	30 096	79 7	78 8
9 12 0 0	♂ Center 1141A S C	30 078	75 0	72 0	69 31 41 1	♂ Center			
					69 32 27 2				
	♂ Ca cri	30 092	77 2	75 5	71 15 57 4	γ Canc i (a)	30 116	80 2	77 5
10 11 54 5	♂ Ce te (o)	30 080	76 9	75 2	69 25 44 8	♂ Center			
		30 070	76 5	74 0	69 17 31 6				
	♂ C ncr	30 012	77 5	74 8	71 15 57 3	γ C n i	30 120	79 5	76 5
11 11 49 0	♂ Center (o)	29 994	77 0	74 0	69 19 16 3	♂ Ce ter (a)			
					69 17 31 4				
	♂ Ca cr	29 994	78 0	76 6	71 15 57 8	γ C n	30 116	80 0	76 9
12 11 43 5	♂ Ce te (m)	29 994	77 7	76 0	69 13 0 8	♂ Ce te (a)			
					69 10 14 0				
	♂ C nc	30 056	79 7	79 8	71 15 57 6	γ C	30 106	79 9	78 0
13 11 38 0	♂ Center ()	30 046	79 4	79 5	69 6 58 9	♂ Ce t (a)			
					68 57 32 1				
	γ Cancr	30 110	79 5	77 6	67 57 55 9	γ Canc i	30 124	79 9	77 7
14 11 32 6	♂ Cente ()				69 1 11 1	♂ Cent (a)			
					68 57 35 2				
	γ C ncr	30 130	78 2	77 0	67 57 56 4	γ Cancr	30 072	79 7	78 5
15 11 27 1	♂ C nter (h)	30 120			68 55 41 2	♂ C ter (a)			
					68 47 9 0				
	γ Canc	30 160	78 2	76 2	67 57 56 8	γ C n i	30 024	80 3	80 2
17 11 16 3	♂ Ce ter ()				68 40 28 4	♂ Ce te			
					68 45 22 7				
	γ C nc i	30 140	78 5	75 0	67 57 56 2	γ C c i	30 076	80 2	79 7
18 11 11 0	♂ Cente	30 136	78 3	74 0	68 40 36 1	♂ Ce te			
	γ Ca c				67 57 55 4	γ C n i	30 076	81 0	79 0
19 11 5 7	♂ Ce ter (g)	30 110	76 0	72 0	68 37 7 5	♂ Ce ter (a)			
					68 31 6 5				
	γ Canc i	30 152	76 5	72 0	67 57 57 2	γ C ncr	29 990	81 8	80 0
20 11 0 4	♂ Center (g)				68 31 54 9	♂ Center (a)			
					68 31 18 4		29 986	80 5	79 8

M M	NAMES				O	M RA MRA	NAME			UT	O N
1837 d l		I l				1839 d h m		I h			
Mar 15 9 11 6	γ Ca cr ♂ C tr (b)	29 960	80 6	79 5	67 57 51 4 68 7 5 9 68 13 10 9	Feb 27 13 22 4	V gi s ♂ Ce te (f)	9 972	77 8	77 6	82 33 15 6 84 36 3 9 84 34 30 8
16 9 7 5	γ C n i ♂ C t (b)	30 000	80 5	79 6	67 57 52 3 68 8 48 3 68 13 12 1	28 13 17 2	V g s ♂ C te (g)	30 010	79 5	79 2	82 33 15 5 84 28 2 0 84 27 20 8
17 9 3 5	♂ Center (b)	30 044	80 4	80 0	68 10 45 2 68 13 11 3		V rg (l)	30 050	77 8	77 4	82 33 15 4 84 12 39 4 84 19 51 4
18 8 59 4	γ Can ♂ C t r (b)	30 054	80 7	78 2	67 57 51 6 68 12 53 5 68 13 10 8	Ma 1 13 12 0	♂ Center V gi (h)	30 032	79 8	79 9	82 33 16 6 84 12 40 9 84 11 37 1
19 8 55	γ C neri ♂ C ite (b)	29 998	82 3	81 8	67 57 51 3 68 15 9 2 68 13 12 2	2 13 6 8	♂ Ce t r V gn ()	30 022	80 0	80 0	82 33 16 4 84 3 14 7 84 5 39 0
20 8 51 6	♂ Cnte	29 990	82 0	80 0	68 17 41 2	5 12 51 1	♂ Center (l)	30 016	81 0	84 8	83 46 20 7 83 44 35 8
1839 Feb 12 14 34 6	V rg n s(b) ♂ C tr	29 964	74 0	73 0	85 25 56 8 86 14 6 3		Leon (m)	30 040	79 8	79 6	83 4 28 0 83 35 39 8 83 37 48 6
13 14 30 1	b V rgin s ♂ Center	29 938	74 4	71 6	85 25 58 1 86 9 14 1	6 12 45 8	♂ Center	29 984	79 0	79 4	83 39 17 5 83 27 56 7
14 14 25 6	b Virg is ♂ Cent r	29 974	77 8	77 8	85 25 57 86 4 6 5	7 12 40 4	♂ Cente ()	30 012	79 9	78 7	83 4 28 1 83 20 40 6 83 16 13 3
16 14 16 3	b Vi g i l i s ♂ C t c V g u i	29 9 0	78 5	78 0	8 25 59 5 8 53 1 3 85 46 29 9	8 12 35 0	♂ Center (o)	29 980	80 9	81 1	83 4 27 3 83 12 9 2 83 12 6 0
17 14 11 6	l Virg inis ♂ Cent r c Virg inis	29 972	79 9	79 1	85 25 57 4 85 47 5 2 85 46 30 0	9 12 29 7	♂ Cente (p)	29 968	80 9	80 9	83 4 27 7 8 59 2 3 83 3 37 2
18 14 6 9	Virg inis ♂ Center	30 014	78 9	78 0	85 36 21 6 85 40 54 2	10 12 24 3	Leo s (q)	29 938	80 7	80 9	83 4 27 4 82 49 31 5 82 55 8 4
19 14 2 2	♂ C iter	30 0 6	78 5	77 0	85 34 1 1		Leonis ()	29 966	82 0	81 9	83 4 27 5 82 49 32 9 82 46 44 3
20 13 57 4	b Virg s ♂ Center	30 050	77 6	77 4	85 25 57 5 85 27 53 9	11 12 18 9	♂ Center	29 960	81 8	81 7	83 4 27 2 82 38 24 8 82 33 16 6
21 13 52 5	b Vi g i l i s ♂ Ce ter	0 090	74 2	75 0	85 25 58 4 85 21 0 6	12 12 13 5	Leonis ()	29 986	81 3	80 7	83 4 27 7 82 30 10 6 82 33 17 1
23 13 42 6	♂ Center (c)	30 076	74 0	73 8	85 6 46 3 85 2 1 0		♂ Cente	30 020	81 1	81 0	83 4 29 4 82 19 40 6 82 22 2 8
24 13 37 6	♂ Center (c)	30 050	73 5	73 2	84 59 19 3 85 2 1 5	13 12 8 1	Leonis Cente V g in s	30 008	81 7	80 2	
25 13 32 6	Vir nis ♂ C iter	30 012	74 0	73 4	82 33 16 1 84 51 44 0	14 12 2 7	Leo i ♂ Ce te Vi gi	30 040	79 8	79 0	
	Virg inis ()	29 992	77 8	76 8	82 33 16 4 84 44 46 4 84 43 58 7		♂ Leonis (s)	30 096	79 7	78 8	
26 13 27 5	♂ Center					15 11 57 3	♂ Center	30 096	79 7	78 3	

M M T	N MRS	R.	T		O N P D	M RA M T	N MRS				O N D
				UT							
1839 d 1 m		I h				1839 d h m		l les			
Mar 16 11 51 9	Leo s (i) ♂ Cente	30 096	79 7	78 3	83 4 28 8 82 15 19 9 82 14 5 3	Apr 3 10 18 2	(D) ♂ Center Leon	30 082	83 2	83 9	80 23 21 2 80 28 45 8 78 34 13 8
17 11 46 5	Leonis ♂ Ce te	30 052	81 7	81 2	83 4 27 9 82 6 16 6	4 10 13 4	(D) ♂ Cente Leo	30 014	83 1	83 9	80 23 21 7 80 25 33 3 78 34 13 9
18 11 41 1	Leo s ♂ Cente	30 068	82 3	82 4	83 4 27 5 81 53 36 4	5 10 8 6	(D) ♂ Cente Leo 1	29 960	84 2	83 9	80 23 21 6 80 22 40 1 78 34 14 3
19 11 35 7	Leonis (w) ♂ Cente	30 066	84 3	83 8	83 4 27 8 81 53 36 2 81 51 7 5	6 10 3 8	(E) ♂ Cente Leonis	29 930	83 7	84 0	80 15 2 9 80 20 5 8 78 34 14 4
21 11 25 0	Leo s ♂ Center (j)	30 038	82 8	82 0	83 4 27 7 81 36 47 9 81 29 55 1	7 9 59 0	(E) ♂ C nte Leonis	29 920	84 0	84 0	80 15 4 3 80 17 51 2 78 34 13 7
22 11 19 7	♂ Center (y)	30 014	82 8	82 9	81 29 57 3 81 29 44 4	8 9 54 3	(E) ♂ Center	29 924	84 6	84 1	80 15 1 5 80 15 55 4
23 11 14 4	♂ Leon1 ♂ Center	30 064	82 5	83 1	81 46 48 8 81 23 22 9	13 9 31 5	(E) ♂ Ce t Leonis	30 024	85 7	84 8	80 15 1 9 80 10 47 5 78 34 13 1
24 11 9 1	♂ Leonis ♂ Ce ter	30 064	82 9	83 7	81 46 49 6 81 17 2 1	14 9 27 1	(E) ♂ Ce ter Leon1	30 010	85 8	85 0	80 15 2 8 80 10 42 0 78 34 13 3
25 11 3 8	♂ Leon1 ♂ Center (A)	30 010	82 3	81 4	81 46 48 4 81 10 55 1 81 8 45 6	15 9 22 7	(E) ♂ Center Leon	29 970	84 1	84 4	80 14 59 0 80 10 54 7 78 34 12 2
26 10 58 6	♂ Leonis ♂ Center	30 000	81 7	82 3	81 46 49 2 81 2 42 1 81 5 5 7	16 9 18 4	(E) ♂ Ce t Leon s	29 926	84 2	84 7	80 14 59 8 80 11 25 6 78 34 13 0
27 10 53 4	♂ Leo ♂ L o is ♂ Ce te	29 972	79 8	78 2	81 46 48 7 81 2 41 1 80 58 33 9	17 9 14 1	(E) ♂ Ce ter Leonis	29 896	85 8	85 2	80 15 2 0 80 12 14 8 78 34 12 1
28 10 48 3	♂ Leo 1 (B) ♂ Center	29 974	81 8	81 3	81 46 48 4 80 50 46 7 80 54 14 3	18 9 9 8	♂ Cente Leonis	29 906	85 6	85 8	80 13 21 7 78 35 13 1
29 10 43 2	♂ Leon (C) ♂ Center	29 960	81 9	82 0	81 46 47 9 80 47 53 5 80 49 19 8	19 9 5 7	♂ Cente Leon s	29 926	84 7	85 7	80 14 46 3 78 34 12 1
30 10 38 1	♂ Leon s (C) ♂ Cente	29 956	81 8	82 1	81 46 42 7 80 47 51 4 80 44 34 6	20 9 1 6	♂ Center (E) Leonis	29 934	84 3	85 3	80 16 26 5 80 15 0 1 78 34 11 5
31 10 33 1	♂ Leon s ♂ Center	30 000	81 8	82 2	81 46 48 5 80 40 10 8	25 8 41 8	♂ Center Leo	29 884	85 0	8 5	80 28 54 1 78 34 11 6
Apr 1 10 28 1	♂ Leon s ♂ Center	30 022	82 2	82 4	81 46 48 0 80 36 4 5	1841	♂ Virginis	29 914	83 8	83 8	102 37 42 0 101 11 50 7 101 9 9 7
2 10 23 1	♂ Leonis ♂ Center	30 099	81 8	82 3	81 46 48 8 80 32 15 5	Mar 18 14 32 0	♂ Cente (a)				

M M T	NAMES	B No R.	T		OBSER N D	M M	N ME	B	T		Obs N
				UT						UT	
1841 d h m		I l				1841 d h m		I l es			
Mar 19 14 27 7	λ V gnis ♂ Cente	29 898	84 3	83 5	102 37 41 2 101 10 23 9	Apr 22 11 36 6	76 V g is ♂ Center	29 896	83 5	83 8	99 20 13 1 98 36 43 0
21 14 18 8	λ V i is 2 L b æ ♂ Cente	29 912	82 5	79 7	102 37 41 0 100 58 41 3 101 6 41 7	27 11 9 8	76 V rg is ♂ Ce te	29 928	84 0	84 8	99 20 13 5 98 8 10 5
22 14 14 4	λ V g nis 2 L bræ ♂ Center	29 946	82 0	80 6	102 37 42 0 100 58 41 9 101 4 33 6	May 5 10 27 9	♂ Ce ter 82 V i g n s	29 804	85 1	86 0	97 29 39 0 97 53 30 9
23 14 9 9	V i g is ♂ Center	29 966 29 956	82 4 81 9	81 5 79 8	99 31 26 0 101 2 12 2	7 10 17 8	♂ Center 82 V rg n s	29 784	88 3	87 9	97 36 58 7 97 53 30 8
25 14 0 7	V g is ♂ C nte L bræ	29 938	80 8	78 6	99 31 24 0 100 56 51 8 100 58 37 3	1843	θ Ophi ch 33 S p ♂ Ce te	29 878	84 0	84 3	114 49 4 9 114 4 32 5 114 4 51 8
27 13 51 3	V gnis ♂ Center (b)	29 884 29 882	78 1 78 1	75 3 74 9	99 31 26 5 100 50 40 3 100 58 38 8	May 7 14 22 4	θ Ophiuch 33 Sco pu ♂ Center	29 860	84 6	83 8	114 49 5 9 114 4 31 8 114 7 47 1
28 13 46 5	V rginis ♂ Center	29 942	80 5	78 7	99 31 26 4 100 47 14 9	8 14 18 2	θ Ophiuch ♂ Center	29 874	84 3	84 0	114 49 8 0 114 10 47 0
29 13 41 8	V i gnis ♂ Center	29 914	82 4	81 7	99 31 25 5 100 43 42 0	9 14 14 0	θ Ophiuch ♂ Center	29 896	84 5	83 2	114 49 4 7 114 16 32 2
30 13 36 9	Virgins ♂ Center (c)	29 934 29 918	82 2 82 3	79 7 79 0	99 31 25 9 100 39 53 8 100 39 31 5	11 14 5 4	θ Ophiuch ♂ Center	9 917	84 0	83 9	114 49 9 1 114 19 25 8
Apr 1 13 27 1	94 Virgins ♂ Center	29 938	82 7	82 5	98 7 26 8 100 31 50 9	12 14 1 0	θ Ophiuch ♂ Center	29 914	83 5	82 5	114 49 8 1 114 25 9 4
2 13 22 1	94 V rginis ♂ Center	29 906	81 8	82 3	98 7 26 6 100 27 32 7	14 13 51 9	A S C 1939 ♂ Ce te	29 769	84 4	84 2	114 49 41 8 115 4 9 3
3 13 17 1	♂ Center (e)	29 918	81 1	82 1	100 23 10 0 100 23 2 3	30 12 33 0	A S C 1939 ♂ Center	29 823	83 8	83 8	114 49 42 5 115 5 56 8
4 13 12 1	♂ Center λ Virgins	29 914	81 0	82 0	100 23 6 3 100 18 23 2 102 37 40 3	31 12 27 7	A S C 1939 ♂ Center (c)	29 848	83 7	82 6	114 49 44 5 115 14 2 8 115 9 15 0
7 12 56 6	♂ Center (g)	29 896	82 7	82 5	99 57 21 1 100 3 28 4	June 2 12 17 0	♂ Center	29 872	84 2	83 7	115 6 21 5
17 12 3 6	82 Virg nis ♂ Center (k)	29 920	83 8	83 8	97 53 32 8 99 6 40 5 98 57 57 8	8 11 44 7	25 Scorpi (e) ♂ Center	29 920	84 3	83 6	115 13 4 8 115 18 33 4 115 17 8 0
18 11 58 2	82 V gnis ♂ Center (k)	29 960	83 8	84 2	97 53 32 9 99 0 37 6 98 58 1 5	9 11 39 3	25 Scorpi (e) ♂ Center	29 898	85 2	84 2	115 13 3 0 115 18 32 1 115 17 48 0
21 11 42 0	82 Virgins ♂ Center (m)	29 932	84 0	84 6	97 53 32 4 98 42 38 2 98 46 13 6	10 11 33 9	Sco p ♂ Center (e)	29 838	84 8	84 2	117 51 50 8 115 19 53 1 115 18 32 0
						17 10 58 5	♂ Center	29 836	84 5	84 2	117 51 53 0 115 19 19
						21 10 35 6	♂ Center	29 830	84 2	83 9	117 51 53 0 115 19 19
						24 10 20 4	♂ Center	29 876	84 8	84 2	115 18 24 7

MAD AS MRA	NAMES	B R.	T RM		Obs VED N P D	M MRA T	N ME	B ME TBL.	T RM		Obs N P D
				UT						UT	
1843 d h m		I hes				1845 d i m		I h			
June 27 10 56	♂ Sco p Center	29 836	84 4	83 9	115 11 33 7 115 17 17 6	Aug 28 11 23 0	♂ Cap icorn ♂ N L ♂ S L	29 880	84 4	84 3	104 15 14 8 110 2 34 2 110 3 7 5
28 10 08	♂ Scorpi Center	29 821	84 0	83 8	115 11 31 4 115 16 56 8	29 11 18 1	♂ Cap icorn ♂ S L ♂ N L	29 912	85 7	84 4	106 48 6 7 110 5 6 2 110 4 36 8
1845 July 22 14 17 0	45 Aquari ♂ Center	29 844	83 5	81 5	104 3 13 1 106 58 40 5	30 11 13 2	♂ C pricorn ♂ N L ♂ S L	29 908	83 8	83 7	106 48 8 0 110 6 14 3 110 6 47 6
25 14 47	45 Aquari ♂ Center (a)	29 842	83 9	82 9	104 3 12 5 107 12 6 1 107 6 50 1	31 11 8 4	♂ Capri or ♂ N L ♂ S L	29 917	84 4	83 3	106 48 6 4 110 7 37 0 110 8 9 9
26 14 05	45 Aquari ♂ Center	29 846	86 1	87 0	104 3 12 8 107 16 59 5	Sept 2 10 58 9	♂ Capricorn ♂ S L ♂ N L	29 972 29 960	85 6 85 5	84 6 84 6	106 47 59 7 110 9 42 7 110 9 13 4
27 13 56 3	♂ Center	29 842	86 3	85 9	107 22 0 0	10 10 22 4	♂ Capricor ♂ N L ♂ S L	29 994	83 5	83 0	109 32 26 9 110 2 29 0 110 2 57 8
31 13 38 8	45 Aquari ♂ Cente	29 850	84 0	82 4	104 3 11 4 107 43 44 2	11 10 18 1	♂ Capricorn ♂ N L ♂ S L	30 000	84 1	83 6	109 32 28 3 110 0 10 9 110 0 38 4
Aug 1 13 34 3	42 Aquari ♂ Center	29 826	84 4	82 5	103 34 36 2 107 49 28 0	12 10 13 8	♂ C pricorn ♂ N L ♂ S L	29 990	83 3	83 1	109 32 26 4 109 57 30 5 109 57 57 2
7 13 6 4	Aquari ♂ Center	29 838	85 7	86 4	104 35 36 5 108 25 19 2	13 10 9 5	♂ Capr corn ♂ N L ♂ S L	30 032 30 036	84 0 84 0	83 8 83 6	109 32 26 8 109 54 32 1 109 54 59 3
8 13 17	Aquari ♂ Center	29 824	83 6	82 3	104 35 36 0 108 31 21 3	14 10 5 3	♂ Cap ico n ♂ N L ♂ S L	30 044	84 0	83 4	109 32 26 8 109 51 15 6 109 51 43 4
12 12 42 3	Aquari ♂ Center	29 906	83 6	81 2	104 35 33 6 108 54 57 9	15 10 1 1	♂ Cap corn ♂ N L ♂ S L	30 076	84 0	83 6	109 32 27 7 109 47 40 0 109 48 6 0
16 12 22 5	35 Aquari ♂ Center	29 877	81 9	79 3	109 14 54 6 109 16 54 7	17 9 53 0	♂ Capricorn ♂ N L ♂ S L	30 034	81 2	81 3	109 32 27 5 109 39 40 3 109 40 7 1
21 11 57 6	♂ C p icorn ♂ Center	29 857 29 848	83 0 82 8	82 7 82 1	104 15 10 7 104 40 24 1	19 9 45 1	♂ Capricorn ♂ N L ♂ S L	29 958	82 3	81 3	109 32 27 7 109 30 30 3 109 30 55 8
23 11 47 6	♂ Capricorn Pia XXI 333 ♂ N L ♂ S L	29 936 29 981	84 2 84 1	83 4 83 3	104 15 10 7 109 53 47 0 109 47 57 6 109 48 29 7	20 9 41 2	♂ Capricorn ♂ N L ♂ S L	29 960	83 6	82 0	109 32 27 1 109 25 29 4 109 25 54 9
26 11 32 8	♂ Capr corn P and XXI 33 ♂ S L ♂ N L	29 916	83 0	82 2	104 15 12 2 109 53 49 0 109 53 7 1 109 57 40 2						
27 11 27 9	♂ Capricorn ♂ N L ♂ S L	29 900 29 884	84 3 84 2	83 5 83 5	104 15 11 5 110 0 16 1 110 0 46 4						

ECLIPSES
OF THE
SUN AND MOON,
AND OF THE
SATELLITES OF THE PLANET JUPITER,
TOGETHER WITH
OCCULTATIONS OF FIXED STARS BY THE MOON
IN THE INTERVAL 1838-1847
AS OBSERVED AT THE MADRAS OBSERVATORY

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OBSERVATION OF THE ECLIPSE OF THE MOON ON THE 17TH FEBRUARY 1840

The time of commencement was so very uncertain that I have not thought it necessary to place the observation on record

	Madras Mean Time		Madras Mean Time
	H. M.		H. M.
The shadow Touches Tycho	6 18 67	The shadow Leaves Tycho	7 57 17 5
Covers ———	6 31 53 6	End of the Eclipse	8 27 55 5
Discovers ———	7 54 48 0		

The umbra was much confused with the Penumbra at the last Observation

Observed with the 5 feet Achromatic power 60

OBSERVATION OF THE ECLIPSE OF THE SUN ON THE 3D MARCH 1840

	Madras Mean Time		Madras Mean Time
	H. M.		H. M.
Beginning of the Eclipse	19 1 25	Leaves a small spot	20 33 26 3
A large spot touched	19 22 44 9	A large spot centre	20 34 53 1
The same spot covered	19 23 12 8	Same spot leaves	20 35 18 0
A large spot covered	19 24 14 6	Leaves a small spot	20 35 57 9
A small spot covered	19 24 34 5	A large spot centre	20 37 57 6
A large spot touched	19 28 34 8	Same spot leaves	20 38 28 5
The same spot covered	19 29 10 7	A large spot centre	20 40 41 1
A small spot covered	19 30 53 4	Same spot leaves	20 41 17 0
A small spot covered	19 36 25 5	A small spot leaves	20 46 19 2
A large and long spot touched	19 49 7 4	A small spot leaves	20 49 50 6
The same spot covered	19 50 34 2	A large spot centre of the head	21 1 44 6
A small spot covered	19 51 46 0	Same spot leaves	21 3 12 4
A double spot covered	19 54 4 6	End of the Eclipse	21 33 40 4

Clear observation certain within 2

Observed with the 5 feet Achromatic with a power of 60

The above was observed by my Assistant *Annutacharyer* during my absence from India

OBSERVATION OF THE ECLIPSE OF THE MOON ON THE 5TH FEBRUARY 1841

	Madras Mean Time		Madras Mean Time
	H. M.		H. M.
Beginning of the Eclipse	17 41 45 4	Copernicus covered	17 59 13 5
Grimaldu covered	17 42 48 2	Heclide touched	17 59 52 4
Galileus covered	17 44 47 9	Tycho touched	18 0 28 4
Gassendus covered	17 49 3 2	M e Imbrum touched	18 1 34 2
Keplerus touched	17 50 37 0	Tycho covered	18 2 15 1
Keplerus covered	17 52 22 7	Regomontanus covered	18 4 34 7
Ariarchus covered	17 52 56 6	Albategnius covered	18 6 1 5
Reinholdus covered	17 53 51 4	Schickard covered	18 8 0 2
Mae Nubium touched	17 54 36 3	Mare Vaporum covered	18 11 28 5
Copernicus touched	17 55 44 1		

Although low the Moon was very clear observation certain within 2 seconds Approaching twilight and the setting of the Moon prevented further observation The Earth's shadow was well defined

Observed with the 5 feet Achromatic power 60

The above was observed by my Assistant *Annutacharyer* during my absence from India

OBSERVATION OF THE ECLIPSE OF THE MOON ON THE 26TH JANUARY 1842

	M	d	na	M	Tim		M	d	na	M	Tim
Beg nng of the Ecl pse	9	38			27 0	Me el us	cove ed	10	18		39 5
A t rchus	co e ed	9	45		53 8	Pl i t	toucl ed	10	21		0 1
G l leu	co red	9	45		50 8	P t t	co e ed	10	22		12 9
H acld s	toucl d	9	47		25 6	Alb teg nus	co e d	10	28		23 9
G n ldu	toucl ed	9	48		0 5	M e Nub um	co e ed	10	30		36 5
G l dus	co e ed	9	51		29 9	M C tium	co e ed	10	38		52 2
Ke l ru	tou hed	9	52		0 8	M e N cta is	o e ed	10	50		46 2
O ea u Procellarum		9	53		38 5	M e Humor um	out	11	24		22 7
Re holdus		9	55		59 1	G m ldu	wlolly o t	11	27		34 2
Pl to	touched	9	56		54 0	M e Humor um	wholly out	11	37		42 5
Coper icus	co e ed	9	58		8 8	K l k	out	11	47		40 9
Pl to	covered	9	58		37 7	A ta chu	wholly out	11	50		13 5
E tost l e res	co red	10	2		22 1	Co l e i	wlolly out	12	4		43 1
M re Imbrium	covered	10	7		27 3	Alb t gnin	wholly o t	12	9		39 3
M e Humor um	touched	10	7		3 3	M e l c c i d tnt s	wlolly o t	12	16		38 1
Mare Serenitatis	toucl d	10	8		50 1	M re C istum	wlolly out	12	27		44 3
B l l dus	co e ed	10	12		22 5	L d of the Ecl pse		12	31		41 4
Posidon us	covere l	10	17		45 6						

Obsc ved with 5 feet Achromatic with a power of 60

The sky was ve y clear and dew falling δ Cancu was near the ed e of the shadow and the observation was certain within 2

Observed by *Anuntacharyer* the head Assistant during my absence from India

OBSERVATION OF THE ECLIPSE OF THE SUN ON THE 20TH DECEMBER 1843

	M	l	na	M	Tim	Obs rv	T l sc p	P
Beginning of the Eclipse	20	2			37 8	B	42 incl	120
	20	2			37 9	F	5 feet	200
	20	2			39 8	A	42 inch	120

At middle breadth of the illuminated portion = 3 98 of the micrometer

	M	l	na	M	Tim			
End of the Eclipse	23	1			19 6	S	42 incl	120
	23	1			21 6	T	5 feet	200
	23	1			24 6	A	42 incl	120

The sky v s perfectly cl and the obsc ations were considered very satisfactory the lette s B S and A refer to my three Ass st ts *Baboo Sashoo* and M William Allen

OBSERVATION OF THE ECLIPSE OF THE MOON ON THE 24TH NOVEMBER 1844

	M	l	na	M	Tim		M	l	na	M	Tim
Beginn g of the Eclipse	15	11			9 0	The shadow covers	Copernicu	15	35		56 9
The shadow touchs G imaldus	15	14			8 5	cove s	Eratothenes	15	38		46 5
touchs Aristarchus	15	28			26 2	touchs	Censorius	15	52		40 2
covers A istarchus	15	29			36 0	covers	C nsorius	15	53		0 1
touchs Tycho	15	31			0 7	touchs	Plato	15	55		16 8
covers Tycho	15	32			41 5	Total obscuration		16	18		30 8

Flying clouds prevented more deta led observation The shadow was particularly well defined and the observations as fr as they go were very satisfactory Observed with the 5 feet Achromatic tl a po ver of 110

OBSERVATION OF THE ECLIPSE OF THE MOON ON THE 21ST MAY 1845

M dras Mean im				M dras Mean Tim			
M				M			
Begin ing of the Eclipse	7	37	38 2 T	The shadow touches Censorius	8	21	11 0 T
The hadow covers Grimaldus	7	41	58 5 L	covers Censorius	8	21	23 0 L
covers Aristaichus	7	41	59 5 T	touches Endymion	8	26	34 2 L
touches Tycho	7	57	27 0 T	covers Endym on	8	26	43 1 T
covers Tycho	7	57	32 9 L	covers Proclu	8	27	23 0 T
touches Copernicus	7	58	56 7 L	couche Mare Crisium	8	27	24 1 L
covers Copern cus	7	58	56 8 T	co ers Mare Crisium	8	37	6 4 T
covers Eratosthenes	8	0	0 6 T	Total obscuration	8	37	8 5 L
	8	0	2 5 L	Clouds p e ented further observation	8	38	53 1 T
	8	2	10 2 T	Last conta t with shadow	8	38	54 2 L
	8	2	12 1 L		8	43	30 3 T
	8	4	36 8 T		8	49	12 5 L
	8	4	38 7 L		8	50	4 3 T
	8	7	54 2 T				
	8	7	57 2 L				

T with 42 inch Telescope power 75 —L with 5 feet Achromatic power 60

The observat on marked L v e e made by C pt n L dlow of the Co ps of Eng neers and tho e marked T were made by myself O r d sagreeme t a to the time of tot lob cur to is e y large conside ing the circumstances but we each felt satisfied tl at our observation was good

OBSERVATION OF THE ECLIPSE OF THE MOON ON THE 13TH NOVEMBER 1845

By reason of ha e the time of commencement of the Eclipse of the Moon could not be observed w th ordinary accuracy I estimated the time as near as ci cumstances permitted at 16 29 38 2 —Observed with the 5 feet Achromat c with a power of 60

The spots were not suffie ntly well defined to admt of observation

OBSERVATION OF THE ECLIPSE OF THE MOON ON THE 24TH SEPTEMBER 1847

M dras M an Tim				M dras M an Tim			
M				M			
Begin ning of the Eclipse	6	48	1 1	End of the E l pse	9	0	43 0

At the commencement of the Eclipse the Moon was en eloped in halo a d ha e whe eby an un ert ty of 20 o 30 seconds attache to this observat on the Eclipse p oceeded the h ze g adually dis ppeared but I w s unable to make any observation on the spots at the end of the Eclipse the ky was tolerably clear and observation satisfactory

Observed with 5 feet Achromatic power 60

OBSERVATION OF THE ECLIPSE OF THE SUN ON THE 9TH OCTOBER 1847

On d rect ng the Telescope to the Sun at about ten minutes before the commencement of the Eclipse there were several spots v ble on his dsc all bei g well defined with the except on of one stuated nea to the edge bout to be e lpsed this spot however I fancied had become much better defined at the time of commencement of eclipse and during the three or four minute which preceded it The sky was quite clear and the time of commencement of eclipse which was considered to be very certain and satisfactory was observed as follows

Madras Mean Tim			
M			
Observed by W	w th 42 nch Achromatic power	75	at 2 8 34 4
— T	— 5 feet	—	— 35 9
— W A	— 42 inch	—	— 35 9

W ef st C ptai W te f th C rp f Madras Artill ry T to my lf and W A t M W lh m All f my A t t

OBSERVATION OF THE ECLIPSE OF THE SUN ON THE 9TH OCTOBER 1847 (*Continued*)

An attempt was made to observe the time of contact with and total obscuration of a well defined dark and double spot at 20 seconds before the estimated time of contact the edge of the spot lost its shapes of definition and as it advanced to closer contact became more and more indistinct and confused—so as to prevent my making even an approximate observation of the time at the other telescopes as above

	Madras M	Time	
	M		
The first contact was noted at	2 25	15 1	by W A
— — — — —	2 25	33 1	— W

The total eclipse of the spot or rather its shadow—for nothing beyond a faint shadow was visible towards the time of total obscuration—was observed as follows

	By T	with 5 feet Achromatic power	60 at	2 25 50 6
	By W A	— 42 incl — —	45 —	2 25 58 1

The above remarks apply equally to all three observers we each fancied that the time of total obscuration was delayed by the appearance of a lengthened shadow long after the substance itself must have been covered

Another similar observation was made of a double spot as follows

	Madras M	Time	
	M		
First contact was observed at	2 57	49 8	by W A
— — — — —	2 57	59 8	— W
— — — — —	2 58	0 8	— T
Total Obscuration was observed at	2 58	46 7	— T
— — — — —	2 58	47 7	— W
— — — — —	2 58	49 7	— W A

Both Captain Worster and Mr Allen agree in assigning the same appearances to this spot as experienced in the observation of the last but my own impression was distinct—that nothing particular had appeared we each had employed the same telescope save that on this last occasion I had used a power of 150

During my absence from the Observatory Mr Allen observed the first contact and total obscuration of a small spot as follows

	Madras M	Time	
	M		
First contact at	3 11	1 7	} With 5 feet Achromatic power 150
Total Obscuration —	3 11	21 7	

He noted that at the first contact no distinctness whatever was visible but that at the time of total Obscuration the distinctness and shadow before observed was now equally obvious

Towards the end of the Eclipse the Sun which had only 7 or 8 degrees altitude had become enveloped in haze which rendered the observations which follow less satisfactory than could be desired

	Madras M	Time	
	M		
End of the Eclipse observed by T	5 9	20 2	
— — — — — W		21 7	
— — — — — W A		25 2	
Telescopes and powers as before noted			

ECLIPSES OF THE SATELLITES OF JUPITER						
1838		I E	800	W	M N M T	REMARKS
1838					H M	
J n 28	IV	Emers on	5 feet	110	9 39 44	
30	I	Imme n	5 feet	110	9 54 34 3	
Feb 4	II	Imme o	5 feet	110	10 27 17 5	
5	III	Im r n	5 feet	110	16 30 1 3	
Mar 17	I	Eme sion	5 feet	110	12 26 53 1	
19	I	Emer ion	5 feet	110	6 55 30 1	
26	II	Emers ion	5 f et	110	7 24 29 5	
26	I	Eme on	5 fe t	110	8 48 46 7	
Apr 2	II	Eme s on	5 f et	110	10 1 47 8	
May 11	I	Eme sion	5 feet	110	9 11 56 1	
11	II	Eme sion	5 feet	110	12 25 21 3	
24	III	Eme sion	5 f et	110	7 22 3 8	Good obser at on
27	I	Eme ion	5 feet	110	7 29 58 6	Good obse tio
1839						
Feb 12	II	Imme s o	5 f et	110	14 18 12 4	Good obse t o
18	I	Inmer n	5 f t	110	11 3 50 9	
20	III	Immersio	5 fe t	110	11 9 42 5	
20	III	E ners o	5 f t	110	13 49 49 5	
25	I	Immersion	5 fe t	110	12 57 27 3	Good ob er at on
27	III	Imme sio	f et	110	15 7 44 9	Ve y good obs t on
Mar 9	II	Imme sio	5 feet	110	11 17 37 5	Good ob ervati n
11	I	Immer i n	5 feet	110	16 44 33 4	A little ha y otherw se atisfactory
13	I	Imme o	5 f et	110	11 13 57 3	
16	II	Imme sion	5 feet	110	13 52 30 4	Ve y good obser at on
29	I	Immersion	5 feet	110	9 28 15 3	S tell te lo e to the b dy but otherw se good observation
Apr 4	III	Inmers on	5 f et	110	10 54 32 8	Satellite very close to the body observation not sat f ctory
5	III	Emers n	5 feet	110	13 34 49 5	
5	I	Eme on	5 feet	110	13 32 55 6	The Em too near the body of the Planet to admit of accurate obsv
7	I	Eme ion	5 feet	110	8 1 9 9	S tell t t o e the Planet fo accur te obse ation
14	I	Emers ion	5 feet	110	9 53 55 3	Good obser at o
17	II	Eme sion	5 feet	110	15 55 12 5	
28	I	Emeis on	5 feet	110	13 44 37 3	
May 7	I	Eme sio	5 f et	110	10 5 20 2	
10	III	Eme io	5 feet	110	9 21 39 9	
1840						
Feb 5	I	Imme sion	5 feet	110	15 40 15 7	Cle obser at on good
6	II	Immersion	5 feet	110	13 10 35 7	Pl net lo clear ob at on satisfacto y
6	III	Imme sion	5 f et	110	13 55 40 3	Clea observat on satisfacto y
6	II	Emers on	5 feet	110	15 26 7 5	Clear ob ervation ood
6	III	Eme sio	5 feet	110	16 1 26 7	Clea obser at on e y good
12	I	Im ne on	5 feet	110	17 33 23 5	Planet in the e th cle obse ation sat sfactory
13	II	Imme n	5 feet	110	15 43 11 4	Clea ob e t on good
13	III	Imme on	5 feet	110	17 52 22 1	Twlght le r obse t on ti facto y
13	II	Eme s on	5 f et	110	17 59 14 0	Do do do do
21	I	Imme on	5 feet	110	13 55 14 3	Pl et clea co enent alt tude ob erv tion e y good
28	I	Imme s o	5 feet	110	15 48 41 6	Pla et the e th le r d w ob e at o good
Mar 8	I	Immersion	5 feet	110	12 10 49 1	Planet low cl obse t or good
13	III	Emersio	5 f et	110	11 47 5 2	Planet clea ob e nt on good
15	I	Imme on	5 feet	110	14 3 49 1	Do do do
20	III	Imme o	5 feet	110	13 40 47 9	Pl et high and cle r moo lght ob ervat on satisf ctory
20	III	Emer i n	5 fe t	110	15 46 54 2	Pl net clear moo lght ob e atio good
22	I	Imme s o	5 feet	110	15 56 51 5	Planet lgh moon lght clea ob ervation good
24	I	Immer ion	5 feet	110	10 26 9 1	Pl n t lo lear ob er t on good
27	III	Immersion	5 feet	110	17 36 8 4	Pla et of on ie t altitude twlght observation sat sfactory
31	I	Immers on	5 feet	110	12 20 4 8	Do do do fly g loud do
Apr 3	II	Imme ion	5 feet	110	9 33 56 3	Pla et low and t emulous ob e ation satisfacto y
7	I	Imme sion	5 feet	110	14 13 50 1	Pl n t the e th cl r ob e atio good

ECLIPSES OF THE SATELLITES OF JUPITER (Continued)

1840	LLTT	I E	500	P	M M 1	REMARKS
1840					M	
Ap 9	I	Immersion	5 feet	110	8 41 40 5	Planet e y low and t emulous ob er at on not satisfacto y
10	II	Immersion	5 feet	110	12 8 18 1	Planet e y l obser at on good
14	I	Immersion	5 feet	110	16 7 12 1	Clear moon light observ tion e y good
16	I	Immersion	5 feet	110	10 36 1 5	Do do do s t factory
17	II	Immersion	5 feet	110	14 42 2 8	Moon near ha y obser ation not satisfactory
23	I	Immersion	5 feet	110	12 29 58 3	Clear obser ation very good
24	II	Immersion	5 feet	110	17 16 28 8	Twilight ha y obse v tion not satisfactory
30	I	Immersion	5 feet	110	14 24 15 2	Plan t lear obser tion good
May 2	I	Immersion	5 feet	110	8 52 12 2	Plan t ery clear obse vation sat sfactory
2	III	Immersion	5 feet	110	13 25 54 3	Planet high and very clear observ tion good
5	II	Immersion	5 feet	110	11 25 20 9	Do do do do
11	I	Immersion	5 feet	110	7 23 11 9	Planet low th n haze obse to s t f cto y
12	II	Immersion	5 feet	110	14 0 13 1	Pla t l gh a d very lea obs vat on not sat f cto y
16	I	Immersion	5 feet	110	14 48 21 5	Planet high full moon at very clear obervat on good
18	I	Immersion	5 feet	110	9 17 9 8	Pl net at convenient altitude clear observation very good
19	II	Immersion	5 feet	110	16 36 30 0	Thin haze observation unsatisfactory
25	I	Immersion	5 feet	110	11 11 5 9	Planet very high clea observat on good
30	II	Immersion	5 feet	110	8 27 5 2	Planet at a convenient altitude ve y clear obse ation very good
31	III	Immersion	5 feet	110	7 25 15 0	Do do do do observation good
June 1	I	Immersion	5 feet	110	13 5 34 9	Planet clear observation very good
3	I	Immersion	5 feet	110	7 34 19 6	Observation good
6	II	Immersion	5 feet	110	11 4 5 3	Haze observation not satisfactory
26	I	Immersion	5 feet	110	7 46 48 0	Planet near the zenith clear observat on very good
July 1	II	Immersion	5 feet	110	8 10 24 2	Planet n the cnth ery clear ob c vat on at f cto y
Aug 27	I	Immersion	5 feet	110	6 32 40 4	Planet suffici tly high th l a e obser ation ti factoy
Sept 19	I	Immersion	5 feet	110	6 42 43 2	Pl net ery cl ar convenient altitude observation good
Oct 12	I	Immersion	5 feet	110	6 55 6 8	Clea observation good
1841						
Jan 8	I	Immersion	5 feet	110	16 31 16 3	Planet low but very clear moon light observation satisfactory
12	II	Immersion	5 feet	110	17 35 50 1	Planet at a convenient alt clear twilight obse vation sat sfactory
22	III	Immersion	5 feet	110	16 35 23 4	Planet sufficiently high ery clear obse vation good
31	I	Immersion	5 feet	110	16 40 7 9	Planet at a convenient altitude air clear obse vation ery good
Feb 13	II	Immersion	5 feet	110	17 8 54 4	Planet sufficiently high a r clea obser ation satisfactory
23	I	Immersion	5 feet	110	16 49 5 1	Planet high and clear observation pretty good
27	III	Immersion	5 feet	110	14 42 26 1	Planet low and clear tremulous observation satisfactory
Mar 4	I	Immersion	5 feet	110	13 10 48 4	Planet in the horizon tremulous clear observation sat sfactory
6	III	Immersion	5 feet	110	16 20 52 1	Planet sufficiently high flying clouds obser ation satisfactory
10	II	Immersion	5 feet	110	14 4 55 6	Planet low thin haze observation other e satisfactory
10	II	Immersion	5 feet	110	15 31 48 3	Planet sufficiently high and clear moon light observation good
11	I	Immersion	5 feet	110	15 4 20 3	Planet convenient alt flying clouds moon light obser satisfactory
17	II	Immersion	5 feet	110	16 37 35 6	Planet ery high fly g clouds observation satisfactory
27	I	Immersion	5 feet	110	13 19 37 0	Pla et sufficiently high and clear observation good
Apr 3	I	Immersion	5 feet	110	15 13 11 7	Obse v tion satisfacto y
10	I	Immersion	5 feet	110	17 8 59 5	Planet ery h gl very clear observation good
11	III	Immersion	5 feet	110	12 9 12 9	Planet low and clear observation satisfactory
11	II	Immersion	5 feet	110	13 33 14 1	Planet sufficiently high and clea observation good
11	III	Immersion	5 feet	110	14 28 55 0	Pl net high flying clouds observation good
18	II	Immersion	5 feet	110	16 6 10 4	Pla et in the ze ith ery clear observation satisfactory
18	III	Immersion	5 feet	110	16 7 20 2	Observat on good
19	I	Immersion	5 feet	110	13 27 59 6	Planet clear observation very good
28	I	Immersion	5 feet	110	9 50 55 0	
May 3	I	Immersion	5 feet	110	17 16 26 7	Planet low but clear twilight obervat on otherw e goo l
5	I	Immersion	5 feet	110	11 45 4 5	Planet sufficiently high and cle r full moon obser ation satisfactory
19	I	Immersion	5 feet	110	15 33 27 0	Pla et l gh and ery clea obervat on good
24	III	Immersion	5 feet	110	11 56 12 9	Planet very high and clear obser ation go d
28	I	Immersion	5 feet	110	11 56 4 6	Planet l gh fly g clouds observation satisfactory
June 14	II	Immersion	5 feet	110	15 5 16 9	Pla et low but clear observat on good

ECLIPSES OF THE SATELLITES OF JUPITER (Contd)

1841	LL	E	EL 800	P	MADRA M	REMARKS
1841					M	
June 15	I	Eme s on	5 feet	110	6 51 55 9	Planet low and e y clear twilight good obse at on
20	I	Eme s o	5 feet	110	14 18 18 2	Planet ufficiently high ha e ob ervation othe w se good
29	III	Eme o	5 f et	110	10 23 11 9	Pla et high rather lazy moon light ob ervation otherw e good
29	I	Eme o	5 feet	110	10 41 44 1	Pl et high and cle observation good
July 13	I	Eme on	5 feet	110	14 31 16 0	Pl net ery low a d e y clear do do
31	I	Eme on	5 feet	110	7 18 24 0	Planet high and clear obser ation sati factory
Aug 3	II	Eme o	5 feet	110	9 13 28 1	Do do do good
23	I	Eme on	5 feet	110	7 32 47 3	Planet h h haze ob ervation otherwise good
Aug 30	I	Eme io	5 feet	110	9 27 1 8	Pla et suffi tly high a d e y cl a moo light obser pretty good
Sept 4	II	Imme o	5 feet	110	6 24 14 8	Pl et n the enuth thun ha e twlght obser ation otherwise good
15	I	Eme io	5 feet	110	7 46 30 7	Planet e y clear obser ation good
Oct 8	I	Eme sio	5 feet	60	8 0 18 6	
1842						
Feb 13	I	Imme io	5 feet	60	15 54 31 9	Pl net the ho i o t emulou clear obse vation othe wise good
Ma 15	IV	Immer	5 feet	110	15 52 31 6	Pl et l dew obser ation good
15	IV	Em on	5 f t	110	17 29 35 6	Plan t e y cl r twlght obse tio atisf cto y
21	III	Em o	5 feet	110	14 14 24 9	Pl net the ho on trem lous clea ob e tion satisfactory
28	III	Imme s n	5 fe t	110	15 8 33 5	Pla et low and ve y cle r obser to tsfacto y
30	I	Imme s on	5 feet	110	16 20 27 0	Planet ery cle r moon light obser at on good
Apr 12	II	Imme on	5 feet	110	15 12 56 7	Pl net suffi ently l gh nd ery clear ob e t on good
15	I	Imme o	5 feet	60	14 37 13 3	Pl net ufficiently high and h e ob er ation satisfact y
May 8	I	Imme ion	5 feet	120	14 46 35 4	Ve y s t f cto y obse t on
15	I	Imme io	5 feet	60	16 39 49 1	Far ob e ato petty clear
21	II	Imme o	5 feet	120	17 18 56 8	God obse at on not th tanding that it was broad day lght
24	I	Imme n	5 feet	110	13 2 37 4	Pl net sufficiently high and moon light ob e ato good
July 27	IV	Imme on	5 feet	110	15 15 52 67	
Oct 7	II	Eme o	5 feet	110	10 29 14 1	
Dec 21	I	Emersion	5 feet	110	6 19 3 2	Planet low and clear observat on good
1843						
Apr 11	I	Immer ion	5 feet	60	16 0 45 1	
13	II	Imme n	5 feet	60	17 6 19 4	
May 4	I	Imme o	5 f et	60	16 9 14 5	H e
June 1	III	Imme ion	5 f et	60	14 55 0 4	
16	II	Imm o	5 f et	60	16 27 13 9	
Sept 14	I	Em s on	5 feet	60	12 9 50 2	Pl net high and clear
23	I	Eme on	5 feet	60	8 33 49 3	
23	I	Eme si	46 I	60	8 33 42 3	
24	II	Em r o	5 feet	110	7 23 21 2	
24	III	Eme o	5 feet	110	10 37 14 3	
Oct 23	I	Eme s o	5 feet	110	10 45 26 5	
No 24	I	Emersion	5 feet	110	7 26 37 7	
1844						
Jan 9	I	Eme s on	5 feet	110	7 57 35 9	
24	III	Eme sion	5 feet	110	7 5 10 8	
June 27	II	Emer on	5 feet	110	13 28 12 0	
30	I	Imme s on	5 fe t	110	16 22 14 3	
July 23	I	Immers o	5 feet	60	16 33 40 2	
Aug 4	III	Immer io	5 feet	60	16 6 33 8	
17	I	Imme ion	5 feet	60	11 11 14 9	
30	II	Imme sion	5 feet	60	10 13 43 6	
Sept 9	I	Imme s on	5 feet	200	11 24 13 2	
9	III	Imme ion	5 feet	60	12 12 15 2	
18	I	Imme s on	5 f et	110	7 47 8 7	Observation good
24	II	Eme o	5 feet	110	9 50 56 3	
25	I	Eme sion	5 feet	110	11 54 26 5	
Oct 1	II	Emer ion	5 feet	110	12 26 1 2	
2	I	Immersio	5 feet	110	11 20 0 4	

ECLIPSES OF THE SATELLITES OF JUPITER (Continued)

1844	S	I E	T	P W	M M M T	REMARKS
1844						
Oct 2	I	Emersion	5 feet	110	H M 18 49 14 1	
4	I	Emersion	5 feet	110	8 18 35 2	
18	I	Emersion	5 feet	110	12 8 16 3	
19	II	Emersion	5 feet	110	6 54 35 2	
22	III	Immersion	5 feet	110	12 25 11 1	
25	I	Emersion	5 feet	110	14 4 30 1	
26	II	Emersion	5 feet	110	9 29 47 5	
27	I	Emersion	5 feet	110	8 33 34 0	
Nov 2	II	Emersion	5 feet	110	12 5 16 9	
3	I	Emersion	5 feet	110	10 29 14 5	
12	I	Emersion	5 feet	110	6 53 33 0	
19	I	Emersion	5 feet	110	8 49 55 5	
20	III	Emersion	5 feet	110	7 27 3 1	Flying clouds doubt
26	I	Emersion	5 feet	110	10 46 15 2	Flying clouds
27	II	Emersion	5 feet	110	9 10 11 2	
27	III	Emersion	5 feet	110	11 23 52 3	Flying clouds
Dec 4	II	Emersion	5 feet	110	11 46 5 2	
12	I	Emersion	5 feet	110	9 6 59 0	Haze
1845						
Jan 9	III	Immersion	5 feet	60	8 58 4 2	
20	I	Emersion	5 feet	60	7 44 59 9	
30	II	Emersion	5 feet	60	8 36 19 4	
Feb 14	III	Emersion	5 feet	110	7 51 24 2	
July 7	III	Emersion	5 feet	110	16 1 42 6	Very faint hazy
12	I	Immersion	5 feet	110	16 23 42 2	Good
14	III	Immersion	5 feet	110	17 43 17 2	Dylight
Aug 26	III	Immersion	5 feet	110	17 49 22 4	Faint
27	I	Immersion	5 feet	110	16 42 55 7	
29	I	Immersion	5 feet	110	11 10 35 1	
31	II	Immersion	5 feet	110	12 49 45 9	
Sept 12	I	Immersion	5 feet	60	14 58 48 2	Observation satisfactory
19	I	Immersion	5 feet	110	16 53 2 8	Moon near the planet
21	I	Immersion	5 feet	110	11 21 30 5	Faint haze
24	III	Immersion	5 feet	110	9 53 32 3	Unsatisfactory haze
24	III	Emersion	5 feet	110	12 0 1 7	Haze pretty good
25	II	Immersion	5 feet	110	9 57 21 9	Haze pretty good
28	I	Immersion	5 feet	110	13 15 32 5	Haze faint
Oct 1	III	Emersion	5 feet	110	16 1 9 7	Observation satisfactory
2	II	Immersion	5 feet	110	12 33 51 7	Observation good
7	I	Immersion	5 feet	110	9 38 40 4	Observation good
23	I	Immersion	5 feet	110	7 56 20 7	Satellite near the body of Jupiter
27	II	Immersion	5 feet	150	9 39 54 7	Observation good
30	I	Emersion	5 feet	150	11 58 58 6	
Nov 1	I	Emersion	5 feet	110	6 27 41 9	Good
3	II	Emersion	5 feet	110	14 39 49 0	Flying clouds
6	III	Emersion	5 feet	110	12 5 1 7	
6	I	Emersion	5 feet	110	13 53 43 0	Good
8	I	Emersion	5 feet	110	8 22 9 9	Observation satisfactory
15	I	Emersion	5 feet	110	10 17 33 6	Planet in the zenith good
29	I	Emersion	5 feet	110	14 9 35 7	Unsatisfactory flying clouds
Dec 17	I	Emersion	5 feet	110	6 57 54 1	
19	III	Immersion	5 feet	110	10 16 38 1	
24	I	Emersion	5 feet	110	8 54 12 9	Haze
1846						
Jan 16	I	Emersion	5 feet	110	9 10 56 1	Unsatisfactory flying clouds
23	I	Emersion	5 feet	110	11 6 51 2	
24	III	Immersion	5 feet	110	6 28 40 6	Very faint

ECLIPSES OF THE SATELLITES OF JUPITER (Continued)

1846	S L L	I E	BO	P W E	M RA M TIM	REMARKS
1846					M	
24	II	Emer on	5 feet	110	8 33 23	Flying clouds
31	III	Imm o	5 feet	110	10 30 53 3	Very fair
Feb 1	I	Emer io	5 feet	110	7 31 45 9	Moon near Jupiter
8	I	Emer ion	5 feet	110	9 28 4 9	
24	L	Eme sion	5 feet	110	7 48 50 5	Good
25	II	Eme s on	5 feet	110	8 14 27 7	Good
Mar 8	III	Immersion	5 feet	110	6 42 53 1	Observation very satisfactory
8	III	Emersion	5 feet	60	8 39 43 9	
29	II	Emersion	5 feet	60	7 57 20 8	Observation satisfactory
July 29	III	Immersion	5 feet	110	14 56 7 8	Very faint flying clouds
29	III	Eme sio	5 feet	110	17 0 41 5	Faint haze unsatisfactory
31	II	Immersion	5 feet	110	15 9 34 6	Very faint haze
Aug 25	II	Eme o	5 feet	110	14 52 36 6	Very good observation
Sept 26	II	Immersion	5 feet	110	12 6 1 0	Very good observation
26	II	Emer ion	5 feet	110	14 39 20 0	Satellite on the edge of the body good
Oct 23	III	Immersion	5 feet	110	14 50 56 6	Satisfactory observation
23	III	Emer io	5 feet	110	17 2 9 1	Satisfactory observation
26	I	Immersion	5 feet	110	11 25 30 1	Satisfactory observation
Nov 4	II	Immersion	5 feet	110	14 28 50 0	Planet in the zenith moon near and very bright good
9	I	Immersion	5 feet	110	15 12 57 5	Planet high good observation
16	I	Immersion	5 feet	110	17 7 0 2	
18	I	Immersion	5 feet	110	11 35 39 1	The satellite seemed to have disappeared at 11h 35m 32s but a few seconds afterwards it appeared unsatisfactory
Dec 10	II	Emersion	5 feet	110	6 5 39 8	
1847						
Jan 12	I	Emer ion	5 feet	110	10 34 19 0	
18	II	Emer o	5 feet	110	8 25 31 4	
19	I	Emer on	5 feet	110	12 29 41 0	Very satisfactory observation
21	I	Emer io	5 feet	110	6 57 37 5	
25	II	Emer on	5 feet	110	11 1 55 3	Satisfactory
28	I	Emer ion	5 feet	110	8 54 26 0	Very satisfactory observation
Feb 4	I	Emer io	5 feet	110	10 50 4 9	
15	III	Immersion	5 feet	110	6 55 45 0	
15	III	Eme sio	5 feet	110	9 20 34 8	
19	II	Eme s on	5 feet	110	8 8 18 1	Satisfactory
22	III	Immersion	5 feet	110	10 57 32 7	
27	I	Emer on	5 feet	110	11 6 41 5	Satisfactory observation
Mar 8	I	Eme s on	5 feet	110	7 31 22 7	Good observation
23	II	Eme sio	5 feet	110	7 48 49 8	Observation very good
30	III	Immersion	5 feet	110	7 1 51 6	
	III	Emersion	5 feet	110	9 33 27 6	
31	I	Emer on	5 feet	110	7 47 55 6	Good observation
Apr 7	I	Emer ion	5 feet	110	9 45 0 8	Good observation
23	I	Emer ion	5 feet	110	8 7 19 6	

OCCULTATION OF STARS BY THE MOON

		Madras Moon Time	
		M	
1840			
June	2	Immersion of 40 <i>Geminor</i> behind the Moon's dark limb observed with the 5 feet Achromatic (power 60) at 7 4 26.1 Clear observation good	
		Immersion of 39 <i>Geminor</i> behind the Moon's dark limb observed with the 5 feet Achromatic (power 60) at 7 5 44.4 Clear observation good	
		Immersion of 37 <i>Geminor</i> behind the Moon's dark limb observed with the 5 feet Achromatic (power 60) at 7 59 46.0 Moon was low but the sky being clear the observation was considered to be good	
	4	Immersion of a small star behind the Moon's dark limb observed with the 5 feet Achromatic (power 60) at 7 31 38.2 Moon was low and the sky covered with thin haze but observation satisfactory	
July	2	Immersion of 8 <i>Leo is</i> (Mag 5) behind the Moon's dark limb at 7 31 45.1 Do 7 <i>Leo is</i> (Mag 8) do do do at 7 33 50.3 Do 9 <i>Leo is</i> (Mag 8) do do do at 7 36 20.4 The Moon was low but very clear observation certain within a quarter of a second	
December	27	Immersion of 837 <i>Capricornus</i> behind the Moon's dark limb observed with the 5 feet Achromatic (power 60) at 6 26 33.7 The Moon was very low but clear observation satisfactory Immersion of a small star in <i>Capricornus</i> behind the Moon's dark limb with the 5 feet Achromatic (power 60) (9th Mag) at 7 56 38.9	
	28	Immersion of 919 <i>Aquarii</i> behind the Moon's dark limb observed with the 5 feet Achromatic (power 60) at 8 20 3.0 The Moon was low but very clear observation very good (Mag 5.6)	
1841			
January	4	Immersion of <i>Polaris</i> behind the Moon's dark limb observed with the 5 feet Achromatic (power 60) at 8 30 28.2 The Moon was in the zenith and clear observation satisfactory (Mag 6)	
	6	Immersion of 49 <i>Geminor</i> behind the Moon's dark limb observed with the 5 feet Achromatic (power 60) clear observation very good (Mag 5) at 6 15 47.4	
	29	Immersion of 73 <i>Arcturus</i> behind the Moon's dark limb observed with the 5 feet Achromatic (power 60) Moon was at a convenient altitude and clear observation good at 9 11 14.0	
February	26	Immersion of <i>Aries</i> behind the Moon's dark limb observed with the 5 feet Achromatic (power 110) at 7 4 44.9 The Moon was sufficiently high and clear observation pretty good	
March	2	Immersion of 37 <i>Geminor</i> behind the Moon's dark limb observed with the 5 feet Achromatic (power 60) at 7 33 59.1 The Moon was in the zenith and very clear observation certain within 1	
	3	Immersion of 82 <i>Geminor</i> behind the Moon's dark limb observed with the 5 feet Achromatic (power 60) at 7 46 20.1 The Moon was in the zenith and very clear observation good	
	3	Immersion of 84 <i>Geminor</i> behind the Moon's dark limb observed with the 5 feet Achromatic (power 60) at 8 25 21.1 The Moon in the meridian very clear observation good	
	4	Immersion of <i>Cancer</i> behind the Moon's dark limb observed with the 5 feet Achromatic (power 60) (Mag 5.6) at 8 8 58.2 Do do 4.5 at 8 14 59.7 Do do 4 at 8 25 49.4	

1841		M		l		ns		M		m	
M	rcd	4	Imm on of tar compoing tle N bulæ n <i>Cancer</i> behi d tle Moo s dak lmb oberved wtl the 5 feet Achrom t (power 60) M g 34	t	8	27	31	9			
			D do do 67	t	8	43	96				
			Do do do 34	t	8	45	14	2			
			D do d 34	t	8	52	30	0			
			D do do 34	t	8	56	12	4			
			D do do 45	t	9	4	19	0			
			Do do do 45	t	9	11	17	4			
			Do do d 4	at	9	15	19	2			
			The Moon w tle entl and cle the m lle stais became too f nt to be obser ed o pp oa hng the moo lght Ob e ations e y ce tain wthn e o d (tle ai wa ery pl nt)								
Ma	ch	5	Imme o <i>Leons</i> belid the Moon dak lmb oberved th tle 5 feet Achromatic (pove 60) (M g 45)	at	7	27	47	5			
			The M on was ufficiently hgh and cl ar obser ato good								
			Imme o of <i>ψ Leonis</i> behnd the Moon drk lmb ob e ed wth th 5 feet Achomat c (pove 60) (M g 56)	t	8	59	54	3			
			Th Moo w e y hgh a d cle tle ta b ne e y f nt o pl roa hng tle Moon s bo de ob e atio low e s tsf to y								
Ap	ril	18	I mer o of 22 <i>Piscum</i> behnd tle Moo enl lte ed lmb observed with the 5 feet Achrom t (po e 60) (M g 45)	t	16	19	31	0			
			The Moon e y low a d cle r ob e vat on ce tan wthm a co d								
			Immersio of 25 <i>Piscum</i> behind th Moon lgl tened lmb bser ed wth tle 5 feet Achrom t (pow 110)	t	17	22	16				
			Moon was at a con enient alt tude with tw lght sufficently ad an ed to render observat o d fficult obse at on petty good								
Ju	e	16	Imme ion of <i>Tauri</i> behind the Moo enlghtened lmb obse ed wth the 5 feet Achomat (pow 110) (M g 5)	t	17	12	44	2			
			The Moon w low d l the sta w s sufficently d st ct notw th t d g the tw lgl t tsf cto y								
July	14		Eme io of <i>Tauri</i> fom behind the Moon d k lmb oberved with the 5 feet Achom t (pow 110) (M g 45)	t	16	55	20				
			The Moo was sufficently hgh l a ob e ato t f to y wth 2								
Octobe	19		Imme s on f <i>Sagittari</i> (56 M g) bel nd the Moon s dak lmb bse ed wth the 5 feet Achomat (pove 60)	t	6	38	23	1			
			The Moon wa low but y cle obser ato good								
			Immer o of 62 <i>Sagittari</i> (56 M g) behind the Moon dark lmb obser d wth the 5 feet Achomat (power 60) l ob tion good	t	6	57	32	9			
December	8		Inme o of <i>Vgnis</i> (56 M g) beh d the Moon e lglte ed lmb ob er ed with the 5 fet Achom t c (pow 60)	t	17	19	68				
			The Moon sufficently hgh d clear obser at on s tsfatory								
1842											
January	15		Imme ion of a mall st bel d the Moon dak lmb bse ed with the 5 feet A ho t (pow r 110)	t	7	1	13	5			
			The Moon w s lov but ery cl a obse ation good								
Ma	ch	15	Imme sion of <i>Piscum</i> (67 M g) behind the Moon s d k lmb oberv d wth the 5 feet Ach o m t (pove 60)	t	7	23	36	4			
			Imme ion of <i>Piscum</i> (45 Mag) behnd the Moo s dal lmb observed with the 5 feet A hro m tic (pove 60)	at	7	24	52				
			The Moo wa e y low but clear obse vat on good								
Th Ob rv t nd mark ar by my A tant <i>Aut l y</i> m d d g my b f m I d											

OCCULTATION OF STARS BY THE MOON (Continued)

1842										M dras M an					
Ma ch 17 Imme ion f the <i>Pleiades</i> behind the Moon's dark limb observed with the 5 feet Achromatic										M					
		(power 60)								t	7	15	68		
	Do		M 67	<i>Pleiades</i>		do				t	7	24	46.2		
	Do		do 67	do		do				at	7	40	19.1		
	D		d 4	do		do				t	8	4	82		
	D		do 45	do		do				at	8	4	46.6		
		Moon was convenient altitude and clear observation good													
	Do		d 6	do		do				t	8	25	43		
	Do		do 45	do		do				t	8	28	12.8		
	D		d 6	do		do				at	8	30	45.3		
	Do		do 67	d		do				at	8	58	42.7		
		Moon became low and was occasionally obscured by flying cloud observation good													
	19	Immersion of <i>Geinor</i> (5 M g) behind the Moon's dark limb observed with the 5 feet Achromatic													
		(power 60)										t 8 44 53.9			
		The Moon was sufficiently high clear observation good													
	30	Immersion of <i>Scorpius</i> behind the Moon's dark limb with 5 feet Achromatic (power 110)										at 16 42 45			
		Moon was high clear observation very good													
1843															
Jan y	5	Immersion of a small star behind the Moon's dark limb observed with the 5 feet Achromatic										t 6 50 44.7			
		(power 110)													
	My	4	Immersion of a small star behind the Moon's dark limb observed with the 5 feet Achromatic										at 7 57 29.7		
			(power 60)												
		4	Immersion of a small star behind the Moon's dark limb observed with the 5 feet Achromatic										at 8 7 2.2		
			(power 60)												
	June	1	Immersion of a small star behind the Moon's dark limb observed with the 5 feet Achromatic										at 7 53 15.7		
			(power 60)												
December 27															
		Immersion of a small star behind the Moon's dark limb observed with the 5 feet Achromatic (power 60)										at 7 49 3.7			
		Immersion of a very small star behind the Moon's dark limb observed with the 5 feet Achromatic										t 8 37 12.8			
		(power 60)													
		Immersion of a bright star behind the Moon's dark limb observed with the 5 feet Achromatic (power 60)										t 9 9 1.6			
1844															
January	23	Immersion of small star (about 6th Magnitude) behind the Moon's dark limb observed with the 5 feet Achromatic (power 110)										at 7 14 33.8			
		26	Immersion of a very bright star behind the Moon's dark limb in the constellation <i>Pegasus</i> observed with the 5 feet Achromatic (power 110)										t 7 17 22.4		
November 14															
		Immersion of bright star (of 5th Magnitude) behind the Moon's dark limb observed with the 5 feet Achromatic (power 110)										at 6 3 14.2			
		Immersion of star (of 6th Magnitude) behind the Moon's dark limb observed with the 5 feet Achromatic (power 110)										at 6 10 31.0			
		Immersion of a star (of 7th Magnitude) behind the Moon's dark limb observed with the 5 feet Achromatic (power 110)										at 6 19 25.5			
1845															
Jan y	10	Immersion of a star (of 5th Magnitude) behind the Moon's dark limb observed with the 5 feet Achromatic (power 60)										at 7 10 57.8			
	Feb uary	10	Immersion of a bright star behind the Moon's dark limb with 5 feet Achromatic (power 60)										at 7 29 29.4		
	June	9	Immersion of a bright star (about 2d Mag) behind the Moon's dark limb observed with the 5 feet Achromatic (power 60)										t 7 46 4.2		

OCCULTATION OF STARS BY THE MOON (Continued)

					Madras M M	T m
1845						
September	10	Immersion of a star (of 5th Mag) in the constellation <i>Sagittarius</i> behind the Moon's dark limb observed with the 5 feet Achromatic (power 60)	t	7	32	12 0
		Immersion of a star (of 4th Mag) in the constellation of <i>Sagittarius</i> behind the Moon's dark limb observed with the 5 feet Achromatic (power 60) least observation satisfactory	t	8	6	47 4
October	5	Immersion of a bright star behind the Moon's dark limb observed with the 5 feet Achromatic (power 110)	t	7	28	14 0
	8	Immersion of a small star behind the Moon's dark limb observed with the 5 feet Achromatic (power 110)	at	7	22	5 3
		Immersion of a small star behind the Moon's dark limb observed with the 5 feet Achromatic (power 110)	at	7	26	20 6
		Immersion of a bright star behind the Moon's dark limb observed with the 5 feet Achromatic (power 110)	at	7	34	25 3
		Immersion of a small star behind the Moon's dark limb observed with the 5 feet Achromatic (power 110)	t	8	8	40 7
		Immersion of a very bright star behind the Moon's dark limb observed with the 5 feet Achromatic (power 110)	t	9	36	56 3
	9	Immersion of a bright star in <i>Capricornus</i> behind the Moon's dark limb observed with the 5 feet Achromatic (power 110)	at	7	31	59 0
		Immersion of a small star behind the Moon's dark limb observed with the 5 feet Achromatic (power 110)	at	8	40	47 8
		Immersion of a bright star (of the 5th Mag) behind the Moon's dark limb observed with the 5 feet Achromatic (power 110)	at	10	25	51 6
November	3	Immersion of a star behind the Moon's dark limb observed with the 5 feet Achromatic (power 110)	at	7	23	21 2
	4	Immersion of a star (of 6th Mag) behind the Moon's dark limb observed with the 5 feet Achromatic (power 110)	t	7	14	44 6
		Immersion of a star (of 7th Mag) behind the Moon's dark limb observed with the 5 feet Achromatic (power 110)	at	7	27	8 6
	5	Immersion of a star (of 5th Mag) behind the Moon's dark limb observed with the 5 feet Achromatic (power 110)	at	6	32	26 3
		Immersion of a star (of 7th Mag) behind the Moon's dark limb with the 5 feet Achromatic (power 110)	at	6	36	11 1
		Immersion of a star (of 7th Mag) behind the Moon's dark limb with the 5 feet Achromatic (power 110)	at	6	51	5 8
	6	Immersion of a star (of 3d Mag) behind the Moon's dark limb observed with the 5 feet Achromatic (power 110)	at	6	56	50 3
		Emergence of the above star from behind the Moon's enlarged limb with 5 feet Achromatic (power 110)	at	8	19	37 4
		Immersion of a bright star behind the Moon's dark limb observed with the 5 feet Achromatic (power 110)	at	9	31	2 8
	7	Immersion of a bright star behind the Moon's dark limb observed with the 5 feet Achromatic (power 110) good	at	9	36	4 1
1846						
January	31	Immersion of a bright star behind the Moon's dark limb observed with the 5 feet Achromatic (power 110)	at	8	4	18 3

OCCULTATION OF STARS BY THE MOON (Cont d)

		M dras Mean im		
		H	M	S.
1846				
M ch	1 Imme ion of brght sta of (5th Mag) behind the M o d rk limb ob e ed with the 5 feet Acl r mati (po e 110)	t 7	48	12 2
	Imme ion of a b ght st of (3d Mag) b l i d the Moo d rk limb ob e v d with the 5 f t Acl o t c (powe 240)	at 8	42	39 2
	2 Occult to of ta of tle (7th M g) by the Moon s d k l i b obse ed with the 5 f e t Achrom t (po e 110) e y s tsf cto y ob e to	t 6	52	53 1
	O cultati n of a t of tle (3d M g) by tl Moon s d k l i b ob e r ed with the 5 feet Acl o t i (po e r 110) t i f to y ob e at on	t 7	43	47 1
	Occ lti of tar of the (3d Mag) by the Moon s d rk l i b observed with the 5 feet Achromatic (power 110) ood obs vatio	at 8	58	54 3
	3 Occ ltiati n of a ta of the (7th M g) by the Moo d k l i b obser ed with the 5 feet Achrom ti (po e 110) t i f cto y b e atio	t 7	8	20 2
	Occultat i of a brght star by the Moon s d rk limb obser ed with the 5 feet Achromatic (power 110) e y good	t 9	42	52 9
	5 Occultati on of star of tle (5th Mag) by the Moon s dark limb observed with the 5 feet Achromatic (powe 110) e y good obser ation	at 7	59	59 4
	Occultati on of a b ght tar by the Moon s dark limb observed with the 5 feet Achromatic (power 110) e y good	at 11	8	34 4
	8 Occultati on of a st of the (3d Mag) by tle Moon s da k l i b observed with the 5 feet Acl omatic (power 60) v e y satsfa to y obser ation	at 7	44	15 5
	31 Occultati on of a star of the (21 Mag) by the Moo s lark l i b obser ed with the 5 feet Achomatic (powe 110) c y good obse vat on	at 6	50	44 3
April	28 Occultati on of a b ght sta by the Moon s dark l i b observed with the 5 feet Achromatic (power 110) good obse v tio	at 7	52	37 1
May	2 Occultati on of a b ght sta behind tle Moon d rk limb observed with the 5 feet Achromatic (powe 110) v e y satisfacto y ob e r ation	at 7	16	52 1
September	24 Occultati on of a brght star behind the Moon s dark l i b observed with the 5 feet Achromatic (power 110) v e y good obser at on	t 7	46	53 1
	26 Occultati on of a st behind the Moon s dark l i b obser ed with the 5 feet Achromatic (power 110) good obser atio	at 6	55	27 8
	Occultati on of a star behind the Moon s dark l i b observed with the 5 feet Achromatic (power 110) v e y good observatio	t 7	22	24 9
	Occultati on of tar behind tle Moon s dark l i b ob e r ed with the 5 feet Achromatic (power 110)	t 8	30	8 3
	28 Occultati on of ϵ' S <i>guttari</i> behind the Moon s dark l i b observed with the 5 feet Achromatic (power 110) good	at 8	15	4 6
	Occultati on of st r by tle Moon s da k l i b observed with the 5 feet Achromatic (power 110) obse ation satisfacto y	at 9	28	56 6
	28 Oc ltiati on of a brght sta by the Moon s da k l i b obse ved with the 5 feet Achromatic (powe 110) satisfacto y	t 9	30	50 2
	Occultati on of a sm l l tar by the Moon s dark l i b observed with the 5 feet Aclromatic (power 110) satisf cto y	at 10	11	57 6
	Occultati on of small star by the Moon s da k l i b observed with the 5 feet Achromatic (powe 110) good	t 10	18	4 6

OCCULTATION OF STARS BY THE MOON (Contd)

				M	rs	Mon	lm
1846							
September	28	Occultation of a small star by the Moon's dark limb observed with the 5 feet Achromatic (power 110) not satisfactory	(power 110)	t	11	12	87
	29	Occultation of a star by the Moon's dark limb observed with the 5 feet Achromatic (power 110) satisfactory observation	(power 110)	t	9	23	63
1847							
January	19	Occultation of a star behind the Moon's dark limb observed with the 5 feet Achromatic (power 110)	(power 110)	t	6	57	45
	20	Occultation of a star behind the Moon's dark limb observed with the 5 feet Achromatic (power 110)	(power 110)	t	8	9	416
		Occultation of a star behind the Moon's dark limb observed with the 5 feet Achromatic (power 110)	(power 110)	t	8	20	358
	21	Occultation of a small star behind the Moon's dark limb observed with the 5 feet Achromatic (power 110)	(power 110)	t	7	6	311
		Occultation of <i>Piscium</i> of (4th Mag) by the Moon's dark limb observed with the 5 feet Achromatic (power 110) very satisfactory observation	(power 110)	at	7	49	245
		Occultation of a small star behind the Moon's dark limb observed with the 5 feet Achromatic (power 110) satisfactory observation	(power 110)	at	8	42	223
	23	Occultation of a small star by the Moon's dark limb observed with the 5 feet Achromatic (power 110)	(power 110)	t	9	45	297
February	23	Occultation of a bright star behind the Moon's dark limb observed with the 5 feet Achromatic (power 110) observation very good	(power 110)	t	9	10	410
April	19	Occultation of a small star by the Moon's dark limb observed with the 5 feet Achromatic (power 110) good observation	(power 110)	t	7	7	331
		Occultation of a bright star by the Moon's dark limb observed with the 5 feet Achromatic (power 110) very good observation	(power 110)	t	7	10	556
		Occultation of a small star by the Moon's dark limb observed with the 5 feet Achromatic (power 110) good observation	(power 110)	at	7	42	394
		Occultation of a very bright star by the Moon's dark limb observed with the 5 feet Achromatic (power 110) very good observation	(power 110)	at	8	7	38
		Occultation of a very bright star by the Moon's dark limb observed with the 5 feet Achromatic (power 110) very good observation	(power 110)	t	8	19	59
May	19	Occultation of a bright star of (4th Mag) by the Moon's dark limb observed with the 5 feet Achromatic (power 110) very satisfactory observation	(power 110)	t	7	48	404
September	20	Occultation of a star of 4th Mag by the Moon's dark limb observed with the 5 feet Achromatic (power 110)	(power 110)	t	7	29	335
		Occultation of a very bright star of 2d Mag by the Moon's dark limb observed with the 5 feet Achromatic (power 110) very good observation	(power 110)	t	7	37	357
October	15	Occultation of a star by the Moon's dark limb observed with the 5 feet Achromatic (power 110) good	(power 110)	at	7	15	22
		Occultation of a star by the Moon's dark limb observed with the 5 feet Achromatic (power 110) very good	(power 110)	t	7	49	345
November	11	Occultation of a star by the Moon's dark limb observed with the 5 feet Achromatic (power 110) haze observation not satisfactory	(power 110)	at	6	47	212

D	N	O T	D	N M	O T	D	N	O T
1838		h m s	1838		l m s	1838		h m s
Jan 3	P c m	0 53 59 62	Feb 7	—	8 59 57 89	Ap 7	Leon	11 14 51 17
	M I L	0 57 40 19					—	11 28 2 04
	η P um	1 22 16 81	8	γ C c	8 33 50 16		M on I L	11 29 48 02
	—	1 36 18 23		Moon I L	8 56 57 64		b V g	11 51 1 72
4	γ P i m	1 22 16 17		Ca i	8 59 58 11		η —	12 10 59 89
	—	1 36 17 65		λ Leo is	9 22 23 99	8	b V g s	11 51 0 77
	Moo I L	1 48 43 11	9	λ Leons	9 22 24 13		η —	12 10 59 00
	ψ A t	2 21 23 13		ψ —	9 34 50 17		M n I L	12 12 53 69
	π —	2 39 43 06		Moon II L	9 48 1 71		γ V s	12 32 48 93
5	ψ A ets	2 21 23 29	M r 4	l A gæ	5 28 4 78		ψ —	12 45 17 77
	π —	2 39 43 39		C T u i	5 42 59 60	9	γ V g	12 32 47 95
	Mo n I L	2 41 9 97		Moon I L	5 53 20 62		ψ —	12 45 16 74
	g A us	3 14 13 07		Gem o	7 24 4 47		Mo I L	12 56 30 06
	η lau i	3 37 19 81	6	—	7 34 28 99		V g m	13 16 0 71
6	g Arietis	3 14 13 43		Moon I L	7 47 35 23	M y 2	λ Leo i	9 21 56 49
	Mo n I L	3 35 47 37					ψ —	9 34 22 46
	γ T u i	3 37 20 34	8	g Cancri	8 9 43 94		Moon I L	9 43 27 11
7	Moon I L	4 32 46 11		λ Leo s	9 22 16 23		γ Leonis	10 10 29 90
	β T ur i	5 15 33 22		Moon I L	9 30 9 63		φ —	10 23 44 41
	ζ —	5 27 27 82		Leonis	9 59 32 24	3	γ Leonis	10 11 14 76
8	β T u i	5 15 34 22		γ —	10 10 50 12		φ —	10 24 29 45
	ζ —	5 27 28 70	9	Leonis	9 59 31 68		Mo n I L	10 30 21 78
	Moo I L	5 31 26 28		γ —	10 10 49 57		Leonis	11 11 59 91
	A igæ	6 4 34 48		Moon I L	10 16 56 67	5	—	—
	Gem no	6 33 28 93		l Leonis	10 40 31 75		V r g i n s	11 37 52 25
9	Aurigæ	6 4 36 01	10	l Leonis	10 40 31 22		β —	11 42 35 71
	Moon I L	6 30 23 26		z —	10 56 26 44		Moo I L	11 57 46 14
	Gen r	7 15 12 18		Mo I I	11 1 3 83		γ Virg i s	12 33 47 83
	—	7 25 28 61		V i	11 37 18 74	6	γ V i l n	12 33 48 83
10	Gen inor	7 15 13 46		β —	11 42 2 28		Mo I I	12 41 7 89
	—	7 25 30 14	11	Virg i n s	11 37 18 18		θ V r g	13 1 55 79
	Moon I L	7 27 55 56		β —	11 42 1 87		—	13 17 1 85
	Mo n II L	7 30 15 18		Moon II L	11 46 55 66	7	o V r g n s	13 1 56 99
	λ Cancri	8 10 27 83	Apr 2	Moo i I L	7 27 56 32		—	13 17 2 99
	η —	8 22 54 08		λ C cri	8 10 21 56		Moon I L	13 25 48 93
Feb 4	T u i	4 53 19 13		φ —	8 16 26 87	9	—	—
	Moo I L	5 13 31 24	3	λ Cancri	8 10 20 30		Libra	14 42 21 02
	β T	5 15 57 45		φ C ncr	8 16 25 74		20 —	14 55 1 53
	Au gæ	6 4 57 60		Moon I L	8 22 26 62		Moo I L	15 3 33 72
5	Aurigæ	6 4 57 36					Moon II L	15 5 48 84
	Moon I L	6 12 1 56	4	ξ Cancri	8 59 27 92	June 2	η Virgin	12 11 27 97
	Gem nor	6 33 51 92		g —	9 9 21 66		Moon I L	12 22 51 03
	—	7 0 43 83		Moo I L	9 13 19 94	3	γ V r g i s	13 45 48 16
6	Gem or	6 33 52 76	5	—	—		θ —	13 1 26 15
	Gem o	7 0 44 41		Leo is	9 48 54 95		Moon I L	13 6 43 54
	Moo I L	7 9 34 66		η —	9 57 54 26	July 1	—	—
	β Geminor	7 35 18 76		Moo I L	10 1 0 15		Moon I L	13 33 8 16
	μ Cancri	7 56 37 11		φ Leonis	10 23 41 43		V g i n s	14 4 44 95
7	β Gem nor	7 35 19 40		l —	10 40 9 21		λ —	14 10 50 56
	μ ¹ Cancri	7 56 37 65	6	φ Leon s	10 23 40 33	31	z Lib æ	15 30 55 14
	Moon I L	8 4 29 31		l —	10 40 8 04		Moon I L	15 41 6 23
	γ Cancri	8 33 49 82		Moo i I L	10 46 10 56		b Scorpi	15 41 27 19
				Leonis	11 14 52 41		σ —	16 11 33 61
				—	11 28 3 13		—	16 20 1 25

D	N	O T	D	N	O T	D	N	O T
1838		h m	1838		h m	1839		h m s
Aug 1	Scorp	16 11 35 38	No 27	Mo n I L	0 44 28 04	F b 25	λ C c	8 11 17 12
		16 36 2 95		γ P ci m	1 23 29 25		γ —	8 34 17 44
	Moo I L	16 38 49 61					M o I L	8 37 47 58
	δ Oph chi	17 17 15 80	Dec 1	T u	4 17 26 12		λ Leo	9 22 51 53
	3 Sagitta i	17 37 37 03				26	λ L	9 22 54 10
2	δ Oph chi	17 17 17 49		Moon II L	4 46 19 16		M o I L	9 29 46 72
	3 S g tt	17 37 38 81	24	M I L	0 26 14 87		Leo	9 32 55 58
	Moon I L	17 41 9 58		P m	0 54 52 79		—	10 0 10 13
3	δ S g tt ri	18 10 56 01		μ —	1 22 2 88		γ —	10 11 28 30
	φ —	18 35 50 74	25	P s m	0 54 55 14	27	Leo s	10 0 12 75
	Moo I L	18 46 32 86		Moo I L	1 18 37 18		γ —	10 11 30 73
	h Sag tta u	19 27 9 39		μ P m	1 22 4 94		M o Cent	10 19 10 37
Sept 3	Aqu	21 57 52 06		γ A t	1 4 2 13		l L o	10 40 12 55
		22 22 15 19		θ —	2 9 30 84		z —	10 56 7 68
	Moo I L	22 25 9 66	26	γ A iet	1 45 4 13	28	l L o	10 41 15 38
	φ Aqu i	23 6 6 72		θ —	2 9 3 90		z —	10 57 10 56
	Piscium	23 18 48 52		Moo I L	2 13 27 54		Moon II L	11 5 48 10
4	φ Aqu	23 6 7 95	28	A T u	3 55 37 82	Mar 22	Moo I L	6 22 38 89
	P m	23 18 49 86		M I L	4 13 55 07		δ G m	7 10 54 64
	Moon II L	23 24 18 43		T i	4 53 55 42		—	7 24 43 75
27	φ S gittar i	18 36 18 80	29	T u	4 53 58 00	23	δ Gem r	7 10 55 34
		18 45 59 84		β —	5 16 36 46		M I L	7 23 58 12
	M I I	18 52 44 12		Moon I L	8 18 46 03		6 Canc i	7 54 2 88
	h S g tt i	19 27 37 71		A æ	6 5 36 73		θ —	8 22 50 08
	c —	19 3 28 67		μ Gem o	6 13 42 49	24	6 C ncri	7 54 3 48
28	h Sagitt u	19 27 39 15	1839				M o I L	8 21 10 74
	c —	19 53 30 16	Ja 23	A et	2 50 10 38		ξ Ca c	9 0 32 08
	Moo I L	19 55 11 27		M o I L	2 52 29 56		q —	9 10 25 85
	ψ C p icorni	20 37 18 77		γ Tau i	3 35 29 23	25	C i	9 0 32 78
	η —	20 55 59 52		A —	3 55 21 02		q —	9 10 26 31
29	ψ C p icorni	20 37 20 22	26	l Au gæ	5 28 34 98		M o I L	9 13 59 54
	η —	20 56 1 07		C T	5 43 29 47		L o	9 50 0 53
	Moo I L	20 56 24 56		Mo I L	5 58 43 46		η —	9 59 0 08
	δ Cap co ni	21 38 56 11		Gem or	6 34 18 50	26	Leo	9 50 1 29
30	γ Cap ico ni	21 31 58 52		—	7 1 10 45		η —	9 59 0 92
	δ —	21 38 57 42	Feb 21	Moon I L	4 35 43 74		Moo I L	10 2 53 18
	Moo I L	21 55 31 02		β T i	5 16 18 49		φ Leo	10 24 47 98
	σ Aqu u	22 22 56 31		C —	5 43 24 12		l —	10 41 15 44
	λ —	22 45 1 68	22	β T u	5 16 17 73	27	φ Leonis	10 24 48 73
Oct 1	σ Aqua i	22 22 57 77		Mo I L	5 38 1 50		l —	10 41 16 30
	λ —	22 45 3 20		C T u	5 43 23 28		M on I L	10 48 46 68
	Moo I L	22 52 33 60		Au gæ	6 5 18 16		Leo is	11 13 19 01
	k Piscium	23 19 31 27		Gem or	6 34 12 60		—	11 29 11 42
	n —	23 40 30 53	23	Gem o	6 34 15 26	28	Leonis	11 13 19 80
Nov 1	γ A et	1 51 30 33		Moo I L	6 41 40 91		—	11 29 12 25
	Moo I L	2 7 26 05		Gem o	7 15 57 19		Moo I L	11 32 43 79
	A etis	2 50 44 68		β —	7 35 41 67		V g is	11 57 30 29
24	Moon I L	22 6 36 99	24	Gem or	7 16 0 10	29	η —	12 12 10 13
	λ Aqua u	22 44 42 59		β —	7 35 44 30		V g	11 57 31 07
25	λ Aqua	22 44 44 71		Moon I L	7 41 40 64		η —	12 12 10 99
	Moon I L	22 59 37 43		λ Canc	8 11 14 40		Moo I L	12 15 49 00
	Pis ium	23 40 12 40		γ —	8 34 14 76		ψ V g ii	12 46 29 93

D	N	O T	D	N	O T	D	N	O T
1839		l m s	1840		l m	1840		h i
M 30	ψ V g M I L O V	12 46 30 72 18 1 7 96 18 37 53 71	F b 12	Au gæ T u M I L C T u	4 46 42 8 4 3 40 07 5 6 4 79 5 43 4 0	Ap 115	3 V	18 4 4 84 18 17 17 84
Ap 125	β V g M I L γ^1 V g n	11 43 4 33 11 57 46 21 12 2 4 80 1 34 16 18	13	C F M I L	5 43 39 6 13 53 41	M y 1	I b æ M I L 20 L b æ r S p	14 42 34 14 14 51 8 82 14 55 15 15 15 39 16 42 15 49 43 36
6	γ V g M I L ψ V g ¹	12 34 17 05 12 45 3 97 12 46 45 96 13 17 29 96	14	M n I I 6 C n c θ —	7 20 35 60 7 53 1 67 8 22 38 63	J 8	η V g M I L γ V g g —	12 12 25 94 12 15 10 83 12 46 45 03 13 0 14 16
27	V g M I I	18 17 30 54 13 28 9 79	15	6 C n M n I L F Ca q —	7 3 52 57 8 21 33 7 9 0 0 90 9 10 14 41	O t 7	δ C p Aq M n I L	21 38 23 95 21 57 59 08 22 1 42 78
8	M C t L b æ 0 —	14 15 3 85 14 43 47 2 14 55 28 13	16	ξ C n q — M n I I L s	9 0 21 82 9 10 1 41 9 18 52 13 9 49 49 36 10 0 3 36	9	P s n λ — M I L B P c i m	23 18 57 43 23 34 6 61 3 39 57 01 0 6 58 19
M y 1	M I L L β V is	11 3 44 88 11 29 32 63 11 43 8 96	17	L on Mo II L	9 49 0 29 10 0 4 40 10 13 58 54	De 3	M n I L B I un	23 41 43 88 0 7 30 89
Ju 21	V r _b O — M I I λ V g	13 17 20 18 13 37 58 72 13 41 41 23 14 11 1 80	M r 13	β C ϕ — M I L	7 35 5 01 7 41 99 8 0 5 79	6	M I L δ Arct g —	0 55 26 14 1 23 24 60 2 20 51 13 3 3 18 46 3 15 41 53
Sept 23	ω P n d — M o i I I L	23 51 19 12 0 12 35 37 0 23 19 38	15	λ L M o I I I I n 34 8 xta ts	9 23 0 02 9 1 41 62 10 24 47 81 10 34 46 12	1841 J y	β A ct M I I A t r — T u i M I L C i u i A gæ	1 46 37 23 1 52 59 19 2 30 33 64 2 41 11 23 4 33 30 28 4 54 23 62 4 48 74 5 44 8 07 6 6 2 91
O t 16	C p n M I L η C p n	20 10 24 65 20 18 34 69 20 55 33 07 21 7 8 71	16	ρ L s 34 b xt t M o n I L L —	10 24 18 3 10 31 46 94 10 41 30 68 11 13 18 4 11 29 10 77	I b 2	β T M o I I	5 17 12 22 5 41 1 67
17	M I L Aq	21 13 17 01 21 58 3 54	17	I is M o I I I V	11 13 18 83 11 28 54 37 11 52 11 08	3	μ Gem o M o n I L	6 14 19 24 6 35 7 84 6 50 21 24
18	Aq M o I L λ Aqu i	21 58 3 84 22 6 38 62 22 44 82 44	Ap 110	θ C i δ — M I I L	8 54 38 8 36 1 62 8 41 30 77	4	C β — M I L δ C s —	7 24 16 91 7 35 24 86 7 56 19 50 8 35 28 45 8 49 37 15
1840 J y 14	M I L A T r	3 18 1 89 3 55 11 84	11	λ I n M n I L L is	9 23 2 09 9 33 4 07 9 35 29 81 10 0 18 4	7	M I L η T u	3 7 53 94 3 38 9 26
1	A ¹ T — M o I L	3 55 12 21 4 16 42 12 4 23 19 65	13	q Leon s M I I β V b —	11 9 32 86 11 12 54 31 12 42 51 25 12 52 14 8	28	η T n M I L Tau	3 88 10 30 4 9 39 07 4 53 43 85
16	β T i I A ngæ M o I L	5 16 9 35 5 28 20 4 5 32 1 59	1	q V r g n s γ^1 — M o I I L	12 6 3 13 12 34 4 91 1 44 14 02			
18	δ G n β — M I L	7 10 33 78 7 35 31 15 7 47 17 03						

D	N	O T	D	N	O T	D	N	O T
1841		h m	1842		l m	1842		h m s
F b 28	β T ur	5 16 22 94	Mar 30	M n II L S rp	16 18 41 67 16 19 46 22	Jun 21	η Oph h 3 S g tta 4 ———	17 2 48 24 17 38 6 63 17 51 39 01
Mar 4	λ C θ ——— M n I L η C F L	8 10 50 61 8 22 17 49 8 30 12 63 9 9 52 25 9 3 8 94	May 17	M n I L ρ L 34 S xt tu	9 50 22 57 10 24 57 97 10 31 56 46	23	M II L 7 S ttt	18 59 20 41 19 28 38 83
5	η C F L M n I L L ρ ———	9 9 53 43 9 23 9 42 9 29 14 17 9 59 41 19 10 24 13 37	18	ρ L 34 S xt tu M n I L L ———	10 24 59 31 10 34 57 98 10 44 5 18 11 13 29 57 11 29 22 03	6	C p β A l n M I L	21 8 40 29 21 24 54 39 21 20 28 64
Ap 1 2	L nis M I L 48 L s X ———	9 59 50 19 10 2 38 19 10 26 26 42 10 56 45 06	20	η Virg n η ——— M n I L 53 V g	1 12 23 27 12 26 11 80 1 30 16 06 13 4 13 74 13 17 26 87	J ly 19	M I I S tta ϕ ———	17 38 57 97 18 6 54 16 18 37 23 18
3	48 L M n I L X L ——— β Virgini	10 26 26 60 10 55 5 49 10 56 45 30 11 28 44 98 11 4 21 42		λ V g M I L O L b æ ———	14 11 12 06 14 21 48 58 14 55 28 13 15 3 1 55	22	C p M C t μ Aq ar	20 11 35 90 20 23 32 83 20 46 50 55
4	L ons β V gns M n I L η V g η ———	11 28 45 46 11 42 21 84 11 46 0 93 12 11 43 60 12 33 33 48	23	20 L b æ ——— M n I L β S p	14 55 29 89 15 3 53 23 15 20 50 86 15 56 55 26	26	P m M II L ω P um	23 18 13 34 23 24 48 46 23 51 3 92
May 26	M I L L	9 28 36 96 10 0 9 94	24	β S p ——— M n II L A Opl u h	15 56 56 92 16 20 25 28 16 23 45 88 17 6 20 22	27	ω P m B ——— M II L P um	23 51 6 04 0 6 44 6 0 8 56 63 0 54 39 01
Aug 24	S p Mo I L	16 19 25 21 16 22 43 63	26	μ Sagitt n λ ——— M II L Sagittar π ———	18 5 4 38 18 18 58 71 18 23 10 49 18 46 13 46 19 1 7 33	28	δ P m M II L η P m	0 40 25 9 0 54 24 6 1 22 58 05
Sept 24	h S g ttar Mo I L β C p n	19 27 10 15 19 40 59 18 20 12 12 66 20 30 8 05	27	S g ttar π ——— M n II L 57 Sagitt n	18 46 14 98 19 1 8 58 19 19 5 62 19 43 47 57	A g 15	η Oph h θ ——— M I L γ S g tta μ ———	17 1 52 47 17 12 5 29 17 19 2 46 17 56 13 1 18 1 52 66
Nov 9	β P m M n I L P um ———	22 56 58 14 22 58 0 41 23 19 57 98 23 32 57 76	29	C p μ Aq n M II L β Aq n C p orn	20 31 52 6 20 44 56 98 21 10 40 26 21 24 3 46 21 39 8 01	16	γ b g tt Mo I L	17 56 14 89 18 16 30 19
1842						21	θ Aq n ξ ——— M II L	22 8 15 2 2 21 27 26 22 26 58 45
Ja y 4	V g Mo II L	13 15 2 09 13 38 12 52	June 19	L b æ 20 ——— M n I L	14 48 34 20 14 56 15 63 14 59 55 51	24	d l m V II L η P n	0 12 19 11 0 38 49 01 1 22 53 9
26	θ C n δ ——— Mo n I L F Le ns ———	8 1 5 30 8 35 12 39 8 35 38 32 9 22 55 82 9 32 13 23	20	L S rp δ ——— M n I L S rp η Oph u h	15 42 56 79 15 52 27 53 15 57 56 37 16 21 11 36 17 2 46 89	S p 12	3 S g tt 4 ——— M I L S g tt ———	17 37 59 48 17 50 30 91 17 57 54 02 18 45 50 62 18 55 35 38
F b 21	G m n r ξ ——— Mo n I L	6 34 58 32 6 54 30 10 6 56 41 23	21	α Sco p M on I L	16 21 13 18 16 58 47 74	13	S g tta M I L Sagitt r	18 45 2 74 18 54 6 42 18 55 97 65
Mar 2	Mo n II L S rpu ———	15 45 31 52 16 19 31 50 16 25 51 07						

D	N	O T	D	N m	O T	D	N	O T
184		l n	1842			1842		l m s
S p 13	/ S g t t 57	19 27 30 19 19 43 25 95	O t 19	η P m M C t θ A t	1 23 48 1 12 8 17 2 9 3 99	D 18	δ G —	7 8 17 49 7 32 30 99
14	7 S t t M I I β C l	19 43 7 81 19 47 13 0 12 34 85 20 1 11 79	N 11	θ Aqu M I L λ Aqu β P n	22 8 31 76 2 21 39 31 2 44 7 61 22 55 5 49	19	δ G n — M II I O C —	7 8 28 19 7 3 41 55 7 41 2 19 8 20 24 44 8 33 29 32
1	β C p M I L	0 1 36 91 0 1 14 01 20 3 16 8	12	λ Aqu β l u M I L	22 44 2 16 2 55 53 00 23 5 48 84	1	ξ I — M II L ρ I	9 23 23 87 9 32 41 28 9 38 24 48 10 21 2 34
16	C p 1 M o I L Aq m θ —	1 7 30 1 21 4 40 88 1 58 24 00 8 0 4	13	P m M I L ω P n d —	23 31 50 04 23 19 53 81 23 50 2 77 0 12 29 19	22	ρ I M II L ρ^t L —	10 21 30 18 10 32 40 44 11 5 40 81 11 22 15 32
17	Aq M I L λ Aqu u λ P s m	1 8 26 04 22 10 9 28 22 44 10 22 2 4 29	1	M n I L β A t s θ —	1 22 25 1 1 45 51 78 2 9 17 39	23	ρ^t L — M II I η V g	11 5 43 47 11 22 17 59 11 25 7 18 12 11 2 21
O t 11	λ^2 S t t M I L β^2 C l o ρ —	19 27 46 61 19 9 4 2 20 13 48 08 20 1 3 94	17	A t δ — M o I L η I l A —	2 50 8 91 3 28 72 3 5 48 88 3 37 8 80 3 5 14 33	1843 J y 9	η P s n M I L ψ A t	1 23 41 77 1 29 36 87 2 22 49 11
1	β C l n M I I C l n	20 13 1 41 20 21 19 01 1 8 43 6	18	η T m A — M I I T —	3 37 56 96 3 5 12 56 4 41 51 33 4 32 36 91 4 53 30 02	11	A t δ — M I I η l A l —	2 50 56 77 3 8 21 72 3 12 19 86 3 38 2 08 3 56 7 68
13	O C l r r M I L ξ Aqua 1	20 58 0 0 21 8 46 39 21 9 4 88 21 31 6 81	D c 12	δ P in — M I L η l m β A t	0 39 41 6 0 53 7 31 1 1 14 40 1 22 14 87 1 45 8 27	21	g V r b s — M o II L	12 26 49 87 12 47 20 46 12 58 24 81
14	ξ Aq 1 C l 1 M o I I γ Aq / —	21 31 9 35 21 46 29 96 21 55 1 4 2 15 18 99 22 9 3 7	13	η P m β A t M I L	1 22 13 29 1 45 6 51 1 49 44 94	2	V b — M II I L l w	13 18 7 16 13 42 32 60 13 54 49 87 14 43 23 31
1	/ Aq / — M o I I / I —	2 13 21 55 6 25 22 33 30 30 23 8 49 73 3 18 41 49	14	ψ A t — M I L η Ta	2 21 19 18 2 39 38 36 2 41 31 18 3 37 16 22	Γ b 8	η T M o I I l —	3 38 4 18 3 42 17 64 4 10 50 12 4 32 14 46
10	/ P l m 1 — M o I L ω l m B —	23 8 13 23 18 44 09 23 2 38 21 23 51 6 01 0 6 44 41	16	T — M o I L β T u ξ —	4 15 0 29 4 31 54 51 4 36 7 81 1 27 39 5 27 20 80	9	T — M I I β l ξ —	4 16 52 52 4 3 47 04 4 39 33 17 16 19 82 28 18 51
17	ω P s um M I I δ P c m —	23 51 8 89 0 7 10 19 0 40 26 0 0 54 41 90	17	β T um ξ — M I L G m o	5 13 42 80 5 25 36 74 5 35 45 97 6 30 7 42	10	β T l ξ — M I L μ G m —	5 16 22 2 5 28 16 07 5 39 32 11 6 18 28 24 6 34 16 89
18	M I L P m η —	0 53 2 43 0 54 44 33 1 23 1 88	18	μ G m o — M I L	6 11 0 83 6 31 49 10 6 40 2 90	11	μ G o — M I L	6 13 30 52 6 34 19 23 6 41 1 69

D	N m	O T	D	N m	O T	D	N m	O T
1843		1 m	1843		h	1843		h m
F b 11	δ G m	7 10 47 72 7 35 1 09	M 12	g G n o ζ C m M I L C n	7 38 28 12 8 4 38 4 8 13 17 41 8 51 20 28 9 0 41 02	Ap 14	δ V M I L M II I	13 5 8 21 13 18 21 33 13 32 8 01 13 34 32 13
1	δ G m	7 10 50 62 7 35 4 05 7 42 8 41 8 22 44 20 8 35 51 1	14	π L M I L 34 S xt ti δ L	9 53 8 18 10 1 33 99 10 9 45 53 10 35 4 48 10 53 0 77	15	λ V M II L L l æ	14 1 6 97 14 37 24 1 15 4 46 7 15 34 24 35
13	θ C δ — M I L ξ Le	8 22 47 89 8 35 54 57 8 42 5 52 9 23 37 85 9 32 5 20	1	34 S xt nt δ L M I L L β V b	10 36 7 30 10 53 3 56 11 7 15 32 11 30 31 34 11 44 7 78	16	L b æ M II L S l	15 4 0 91 15 34 28 17 15 42 9 31 16 13 13 21 16 21 21 29
14	ξ L — M n C t ρ L 34 b t ts	9 23 40 69 9 32 58 07 9 43 11 0 10 24 44 66 10 34 43 06	16	L β V M 2 L ψ V σ g —	11 30 35 26 11 44 11 75 12 7 31 16 12 47 52 38 13 1 21 53	17	S p M II L θ Opl h D —	16 13 16 80 16 21 2 13 16 47 15 52 17 13 59 88 17 3 33 01
15	ρ L m 34 b xt t M n II L L —	10 24 47 00 10 34 45 71 10 41 52 20 11 20 6 36 11 29 9 88	17	γ V g ¹ s / — M L	12 47 55 74 13 1 24 88 13 6 39 88	M y 8	L M I L δ L p ⁺ —	10 0 4 80 10 13 12 38 10 53 12 91 11 6 29 19
16	Leom — M II L η V q —	11 20 9 10 11 29 12 00 11 38 40 88 12 12 9 90 12 25 58 28	19	L b æ 20 — M o 2 L A q 1 β —	14 43 52 36 14 56 45 54 15 9 56 45 15 46 3 46 15 58 10 69	9	δ I p ⁺ L M I L L β V g	10 3 17 47 11 6 33 78 11 8 0 6 11 29 1 34 11 43 21 73
17	η V n q — M n II L g V —	12 12 12 54 12 26 1 02 12 3 39 24 13 0 0 89 13 17 15 81	Ap 18	M 1 L θ C δ —	7 47 58 63 8 23 39 16 8 36 46 30	11	q V ψ — M I L V g ¹	12 26 38 89 12 47 9 71 13 1 9 10 13 42 19 56
18	g V s — M II L λ V g ¹ s	13 0 3 77 13 17 18 65 13 33 34 01 14 10 59 89	9	θ C δ — M I I ξ L —	8 23 42 66 8 36 49 8 8 44 54 3 9 24 33 12 9 33 50 86	12	V g M I L L b æ 20 —	13 42 2 97 14 1 46 27 14 43 14 40 14 5 56 17
19	λ V g Mo II L L b æ χ —	14 11 2 79 14 32 52 22 15 42 20 15 31 26 00	10	ξ L — M I L L ρ —	9 24 37 50 9 33 54 94 9 41 8 00 10 1 9 50 10 25 41 76	13	L b æ 20 — M I I Mo II L δ S p —	14 43 17 68 14 5 59 49 1 5 22 51 15 7 50 19 1 52 9 65 16 1 45 49
20	L b æ M n II L S p —	15 8 45 01 15 33 26 05 16 12 7 32 16 20 15 40	11	M I L L	10 37 8 21 11 21 5 01	14	S p M II I θ Oph l	16 12 49 00 16 13 27 84 17 13 32 13
21	S p — M n II L	16 12 10 06 16 20 18 19 16 34 30 69	1	I 1 s L n M I L q V g ¹ s	11 21 9 24 11 30 11 99 11 33 43 62 12 26 58 68	1	A Opl uli θ — M II L μ S tt	17 6 55 70 17 13 36 23 17 19 6 59 18 5 36 04
Mar 11	ζ G m or δ — M n I L g Gem r	6 56 10 17 7 12 7 06 7 13 49 55 7 38 24 35	13	η V 1 g ¹ q — M 1 L 53 V gn —	12 13 13 33 12 27 1 71 12 31 47 74 13 5 3 73 13 18 16 73	J c	L M I L η V q —	11 29 16 92 11 42 33 58 12 12 14 98 12 26 8 49

D	N	O T	D	N	O T	D	N	O T
1843		l m s	1843		h n	1843		l m
J ne 7	η Vrg s	12 12 18 22	Oct 3	μ Aqu	20 43 24 47	N 8	M II L	4 4 7 40
	η —	12 26 6 75		M I L	21 0 15 93		T	4 33 1 68
	M I L	12 37 32 29		δ C I	21 6 23 95		—	4 53 54 85
	53 V g	13 4 9 04		30 Aqu	21 37 36 06	11	γ G m	6 19 53 44
	—	13 17 21 97			21 4 14 43		—	6 34 31 37
8	V s	13 17 25 67	4	δ C p c	21 37 34 88		M II L	6 48 25 83
	Moo I L	13 35 3 43		30 Aqu	21 54 13 31		δ G m 10	7 10 59 41
	λ Vigns	14 11 7 73		M I L	21 51 35 17		—	7 35 12 59
9	λ V g i	14 11 11 21		γ Aqu u	22 12 45 19	13	θ C n	8 22 55 29
	M o I L	14 35 40 48		η —	22 26 29 69		M o II L	8 36 20 34
	L b æ	14 42 46 19		γ Aqu i	22 1 43 85		C i	8 59 30 97
	—	15 3 51 20		η —	2 26 28 46	14	C c	8 59 32 01
	—	15 33 29 08		Moon I L	22 41 56 94		M II L	9 29 7 05
10	Libræ	15 33 32 12	6	γ Pi m	23 8 11 88		Leo	10 0 17 63
	M o I L	15 39 9 95		—	23 18 3 42	28	θ Aqua i	22 9 1 84
	S o pu	16 20 25 52		M on I L	23 26 21 89		M o I L	22 9 59 24
	—	16 26 45 20					γ Aquai i	22 27 46 31
15	ρ C p o	20 20 46 17	7	ω P sc m	23 50 24 42	29	α P cum	22 53 4 34
	Aqu i	20 40 2 25		Moon I L	0 11 39 86		M o n I L	22 56 36 77
	M o II L	20 45 17 53	13	M n II L	5 17 24 49		P ciu n	23 19 22 79
	s C p icornu	21 7 54 93		C Ia i	5 45 27 85		—	23 32 22 24
	β Aquai u	21 24 9 13	14	C Tau i	5 45 39 15	30	P scium	23 32 22 68
16	s C i cornu	21 7 58 10		Moo II L	6 12 52 65		Moon I L	23 42 9 13
	β Aquai i	21 24 12 2	31	μ Gem or	6 15 39 07	Dec 9	ζ Gen or	6 55 24 63
	Moo II L	21 35 26 99		—	6 36 27 65		δ —	7 11 21 64
	30 Aquai	21 55 55 51		β Aquai	21 22 57 09		Moon II L	7 26 30 65
	γ Aquari	22 14 27 33		Moo I L	21 39 30 88	13	d Leon s	10 53 6 28
A g 8	ϵ Sa tt u	19 33 1 05		θ Aqu	22 8 12 78		Moo II L	10 56 45 94
	Moon I L	19 56 29 89		ζ —	22 20 24 80		Leo	11 23 56 70
	C pr cornu	20 30 35 18	Nov 2	β P cum	22 55 44 05		β V l g n i s	11 43 10 07
	γ Aquari	20 43 39 51		γ —	23 8 52 51	29	M o n I L	0 56 3 72
Sept 4	ρ Sa ttari	19 12 48 08		M on I L	23 12 17 79		η Pis cum	1 23 47 84
	Moon I L	19 39 17 91		P i cum	23 31 43 66	30	η Pisc i m	1 23 47 80
8	λ Aquar	22 44 27 90		ω —	23 51 6 34		Moo I L	1 43 18 81
	M I L	22 56 52 25	3	P um	23 51 11 88		θ A i t i s	2 10 7 00
	P cum	23 18 55 51		M on I L	23 57 33 04		—	2 30 37 72
	—	23 31 55 02	4	Moo I L	0 43 14 81	31	θ^1 A i e t s	2 10 7 04
11	Moon II L	1 16 10 18		γ P i cum	1 23 8 96		Moon I L	2 32 19 39
	β A t	1 45 55 00	5	η P s m	1 3 14 88		δ A i e t s	3 3 22 94
13	A t s	2 29 45 95		Moon I L	1 30 8 02	1844		
	—	2 50 5 90	6	θ A i e t i s	2 9 34 01	Jan 2	A ¹ T r i	3 56 8 81
	Moon II L	2 53 33 38					ω^2 Tau i	4 8 47 50
14	γ A r e t s	3 14 51 46		θ Ar t i s	2 9 34 17		Moon I L	4 16 54 63
	η F u i	3 37 58 27		Moon I L	2 18 40 65		T i i	4 54 26 57
	M o II L	3 45 22 61		A i e t s	2 50 24 82		n Taur	5 10 34 63
	T u i	4 16 43 41		δ —	3 2 49 83	3	Tau	4 54 26 95
	—	4 32 37 87	7	M o n II L	3 11 28 12		Moo i I I	5 12 7 05
Oct 2	β Cap co ni	20 11 26 09		γ T u r	3 38 20 92		H G m i n o	5 55 18 66
	Moo I L	20 15 30 98		A ¹ —	3 55 36 37		η —	6 6 7 94
	μ Aquari	20 43 25 89	8	η Taur	3 38 21 68			
	—	21 0 17 31		A —	3 55 37 29			

D	N M	O T	D	N	O T	D	N	O T
1844		l m	1844		h m	1844		l m
Ja 4	H G m o	5 55 18 82	Feb 4	C	9 0 7 69	M 4	q Leo	10 25 35 31
	l ———	6 6 8 06		M I L	9 26 17 54		M I L	10 49 30 27
	Mo I L	6 8 18 87		M o II L	9 28 31 42		L o	11 23 20 69
	C m	6 35 0 43		π Leo 18	9 52 48 07		β V g	11 43 34 10
	ζ ———	6 55 31 66		—————	10 0 53 50	5	Le s	11 23 21 30
5	Gem o	6 35 0 27	6	d L o s	10 53 22 33		Moo II L	11 47 7 66
	ζ ———	6 56 31 50		M II L	11 15 58 80	6	q V g 1	12 26 44 97
	M II L	7 6 46 94		β V g	11 43 26 34		M II L	12 43 55 88
	g G m or	7 37 45 48		η ———	12 12 47 40		ψ V g 1 s	12 47 15 83
	ζ C c	8 3 55 63	7	β V g	11 43 27 36		—————	13 17 59 72
6	g G m	7 37 45 22		M o II L	12 10 13 88		x ———	13 42 25 23
	M II L	8 2 7 86		η V g	12 12 48 46	7	V 1 g s	13 18 0 30
	ζ C	8 3 55 79		ψ ———	12 47 7 94		Moo II L	13 42 45 28
	δ ———	8 36 28 92		g ———	13 0 37 15		λ V 1 g 1	14 11 41 86
	—————	8 50 36 96	8	ψ V g	12 47 9 10		Lib æ	14 43 16 76
7	C c	8 50 37 02		g ———	13 0 37 97	8	λ V g	14 11 42 48
	Moo II L	8 56 13 09		Mo II L	13 5 53 81		M n II L	14 43 48 77
	ξ Le n	9 24 11 84		α V g	13 42 18 38		L b æ	15 33 59 65
	—————	9 33 29 05		—————	14 5 28 67		δ S o p n	15 5 8 74
8	ξ Ieo 1	9 24 11 80	9	V g s	13 42 19 30	9	Lib æ	1 3 59 79
	L	9 33 29 05		M o II L	14 3 39 55		Moo I L	15 46 41 86
	M o II L	9 49 6 62		α L b æ	14 43 10 11		δ Sco p 1	15 52 8 98
	q Leo 1	10 25 15 19		20 ———	14 55 51 88		—————	16 20 52 84
	34 Se ta t s	10 35 13 59	27	T u	4 54 44 19		m ———	16 33 35 03
10	Leo	11 22 59 99		M o I L	5 19 32 24	10	Sco p 1	16 20 53 14
	—————	11 29 36 90		η Gemino	6 6 25 61		m ———	16 33 35 33
	Moo II L	11 33 37 99		μ ———	6 14 29 33		Moo II L	16 50 19 63
	l V g	12 12 34 72	28	η G mino	6 6 25 78		θ Oph u h	17 13 27 86
	q ———	12 26 23 05		—————	6 14 29 36	27	Moon I L	6 45 11 94
11	η V g 1	12 12 34 60		M I L	6 14 37 52		δ Gem or	7 11 0 03
	M II L	12 27 1 75		ζ G m o	6 55 49 50	28	δ Gem o	7 11 0 77
	g V g 1 s	13 0 22 62		δ ———	7 11 46 48		k ———	7 24 54 75
	—————	13 17 37 60	29	ζ G m o	6 55 49 71		M o I L	7 39 16 20
12	g V g	13 0 22 88		M o I L	7 10 4 27		θ C	8 22 54 68
	—————	13 17 37 80		δ Gem o	7 11 46 70		δ ———	8 36 1 76
	Mo II L	13 22 28 49		g ———	7 38 3 90	29	θ C c	8 22 55 61
	V g	14 5 13 54	M r 1	g Gem no	7 38 4 06		Moon I L	8 33 4 54
	λ ———	14 11 19 27		ζ C	8 4 14 39		δ Canc	8 36 2 61
28	A et	2 51 1 24		M o I L	8 5 22 47		—————	8 59 31 45
	Moon I L	3 2 8 36		δ C ner	8 36 47 76		ξ Leo s	9 23 46 03
	δ A t s	3 3 26 48		—————	8 50 55 89	30	C nc	8 59 32 43
	η Ta 1	3 38 56 72	2	δ Canc	8 36 48 00		Leo	9 23 46 45
	A ———	3 56 12 45		—————	8 50 56 14		M n I L	9 26 43 54
29	l T u	3 38 57 42		M I L	9 0 16 06		π L	9 52 12 75
	Mo I L	3 54 15 02		Leo 1	9 33 48 33		—————	10 0 18 14
	A 1 T u	3 56 13 09		π ———	9 57 57 15	31	π Leo	9 52 13 56
Feb 1	μ Gem or	6 14 18 41	3	Leon	9 33 48 79		—————	10 0 18 98
	—————	6 35 7 17		π ———	9 52 57 43		Mo I L	10 20 39 33
	Moon I L	6 40 7 12		Moo I L	9 54 50 64		d Leo 1	10 52 4 83
	δ Ge nor	7 11 35 35		q Leo	10 25 35 17		q ———	11 8 59 54
	k ———	7 25 29 29		d ———	10 53 29 79			

D	N	O T	D	N	O T	D	N	O T
1844		h m	1844		h m s	1844		h m
Ap 1	d L	10 52 46 93	Ap 30	M on I L	12 39 47 81	Jun 28	S o p	16 20 47 91
	φ ———	11 9 0 74		V i g	13 17 34 41		Moo I L	16 56 48 71
	M o I L	11 15 31 33		α ———	13 4 0 00	J ly 2	M II L	21 10 24 94
	β V g i	11 42 51 07	May 1	V g	13 17 34 41		λ C l o	21 39 4 61
	η ———	12 12 12 71		M o I L	13 40 5 21		30 Aq a u	21 56 0 09
	β V s	11 42 52 21		λ V g u	14 11 16 35	24	Moo I L	15 24 50 27
	M o I L	12 1 6 40	2	L b m	14 42 52 01		Sco pi	16 20 48 62
	V r g i	13 17 17 36		M o n II L	14 46 26 35	27	λ S g tt	18 19 3 57
3	θ V g i	13 2 12 10	3	M o n II L	15 53 15 08		M I L	18 36 59 22
	M C e t	13 12 18 93		β Sc p i	15 56 59 93		φ S g tt	19 13 20 15
	V i g i s	13 17 18 42		α ———	16 20 28 68		—————	19 34 18 20
	—————	14 4 54 88		γ Opl ucl i	17 2 3 35	Aug 4	γ P c m	1 23 57 90
	λ ———	14 11 0 44	26	γ L u s	10 53 22 30		M o n II L	1 47 39 23
4	V m i	14 4 55 24		φ ———	11 9 36 25		γ A e t	2 23 4 89
	λ ———	14 11 1 31		Moo I I	11 19 13 48		—————	2 30 47 26
	M II L	14 15 23 09		β V g s	11 43 26 60	5	γ A i e t	2 23 5 77
	L l v	14 42 36 0		η ———	12 12 48 12		—————	2 30 48 28
	20 ———	14 55 18 92	28	φ V r g i u s	12 47 8 0		Moon II L	2 37 19 01
5	L b m	14 42 37 42		3 ———	13 4 40 09	23	4 Sa itta i	17 51 6 77
	20 ———	14 55 19 28		Moo I L	13 9 59 37		—————	18 5 16 58
	M o n II L	15 19 48 75	29	Moo I L	14 10 42 53		Moon I L	18 15 22 20
	β Scorpi	15 56 44 21		L b m	14 43 10 17		S g tta u	18 46 26 22
	—————	16 20 13 00		20 ———	14 55 52 4		π ———	19 1 19 70
6	β Sco p	15 56 45 39	30	γ L b m	14 43 10 84	24	S g t t r	18 46 26 80
	—————	16 20 14 24		20 ———	14 55 52 79		π ———	19 1 20 24
	Moon II I	16 2 36 04		M o I I	15 15 23 19		Moon I L	19 17 12 39
	γ Opl ucl i	17 1 48 68		β Sco i	15 57 18 22	Sept 20	γ S g t t r	18 44 52 30
	θ ———	17 12 48 78	31	Sco pi	16 20 47 58		—————	18 55 27 49
7	γ Opl ucl i	17 1 49 90		Moon I L	16 23 0 51		Moon I I	18 57 20 64
	θ ———	17 12 49 90	June 3	φ Sa itta u	19 13 35 92	21	ϵ S g t t a r i	19 33 44 43
	M II L	17 30 55 21		ϵ ———	19 34 33 89		57 ———	19 43 16 76
	μ S g t t a u	18 4 49 68		Moo II L	19 43 18 59		M o n I L	19 56 18 32
	Clype Sob	18 20 41 62	4	Cap c u	20 10 22 21		C p c o n	20 31 18 97
8	γ Sa g tta	18 4 50 76		Moo II L	20 41 32 92		γ Aqu i	20 44 23 47
	Clype Sob	18 20 43 00		s Cap o i u	21 8 4 78	23	β Aqua i	21 23 32 13
	Moon II L	18 33 55 74		β Aquari	21 24 18 56		λ C p i c o n	21 38 19 64
26	Cancer	8 50 29 62	5	s Cap corni	21 8 4 46		Moon I L	21 45 29 50
	Moo I L	9 3 30 00		β Aqu r i	21 24 18 58		γ Aqua i	22 13 47 44
	Leonis	9 33 22 01		Moo II L	21 35 32 23		η ———	22 27 32 05
	α ———	9 52 30 70	6	θ Aquaru	22 9 33 63	24	γ Aqua	22 13 49 50
28	φ Leon s	10 25 9 01		ζ ———	22 21 45 44		—————	22 27 34 06
	Moon I L	10 48 25 59		θ Aquar	22 9 33 39		Moo I I	22 36 36 09
	d Leon is	10 53 3 69		ζ ———	22 21 45 25		γ Pis um	23 9 18 67
	σ ———	11 13 39 03		Moo I II L	22 26 9 31		—————	23 19 10 07
	—————	11 29 31 48	25	V r m i s	13 17 54 24	25	γ Ps um	23 9 20 81
29	Leonis	11 29 32 14		α ———	13 42 19 84		—————	23 19 12 39
	M o n I L	11 42 50 29		M o I L	13 44 22 02		Moo I L	23 26 19 62
	η V i g u s	12 12 30 14		λ V g i s	14 11 36 20		P i c u n	23 51 34 56
	η ———	12 26 18 67		Lubm	14 43 11 34	26	d P c i m	0 12 52 57
30	η Vir i s	12 12 30 60					Moon I L	0 15 23 50
	η ———	12 26 19 12						

D	N	O T	D	N	O T	D	N	O T
1844		h m s	1844		h m s	1844		h m
Sept 26	δ P c m	0 40 53 84 0 55 9 46	Oct 24	δ P i m Moon I L / P scium	0 41 29 07 0 47 16 89 1 24 2 73	No 23	Moon I L γ T A ———	2 59 11 54 3 38 31 00 3 55 46 45
28	π P i cium β A et Mo n II L Ari t s π ———	1 29 12 10 1 46 24 33 1 56 14 75 2 30 20 43 2 40 58 08	25	γ P c m Moo I L θ A t ψ ———	1 24 4 12 1 36 19 78 2 10 23 26 2 23 11 61	24	γ T M n I L A T i —————	3 38 32 34 3 50 46 17 3 55 48 02 4 19 49 88 4 33 12 38
29	A et s π ——— Moon II L g A et γ T u	2 30 22 09 2 40 59 84 2 46 43 83 3 15 30 55 3 38 37 59	26	θ A et ψ ——— Moo II L A iet δ ———	2 10 24 32 2 23 12 55 2 28 27 07 2 51 15 04 3 3 40 00	25	Tau ————— Moo II L	4 19 51 05 4 33 13 78 4 45 21 40
30	g A etis Moo II L γ Tauri ω ———	3 15 32 59 3 38 9 18 3 38 39 26 4 8 33 48	27	A et δ ——— M n II L A T ω ———	2 51 16 36 3 3 41 28 3 19 31 61 3 56 27 01 4 9 5 86	26	β Tau ζ ——— Moo II L	5 16 48 00 5 28 40 96 5 38 2 25
Oct 1	ω T u Moo II L T u i ————— β ———	4 8 35 59 4 30 22 52 4 33 21 31 4 54 14 42 5 16 54 18	28	ω T u M II L T i	4 9 7 21 4 11 31 50 4 33 52 92	27	M o II L ζ Gemnor δ ———	6 30 21 63 6 55 13 65 7 11 10 65
2	T ur β ——— Moon II L γ Gem o μ ———	4 54 16 28 5 16 55 95 5 23 3 50 6 5 57 08 6 14 0 70	31	γ Gemnor ————— Moon II L	6 29 45 23 6 35 23 36 6 48 41 22	28	ζ G m δ ——— M n II L ζ Ca c i	6 55 14 76 7 11 11 80 7 21 52 50 8 3 38 78
3	γ Gem o μ ——— Moon II L ζ Gemnor δ ———	6 5 59 07 6 14 3 01 6 15 48 75 6 55 22 36 7 11 19 09	Nov 2	θ Canc Moon II L	8 23 46 40 8 30 42 53	29	Moon II L	8 12 21 17
18	ϵ S g ttaru Moon I L C pri o i Aqua u	19 34 17 94 19 39 16 38 20 10 6 28 20 39 56 10	3	Canc i M n II L Leon	9 0 23 65 9 20 56 59 10 1 9 32	30	δ C nc ————— Moon II L Leo π ———	8 36 14 30 8 50 22 39 9 1 5 26 9 33 14 19 9 52 22 87
19	Cap corni Moo I L Aqua i ————— β ———	20 10 7 68 20 36 8 92 20 39 58 18 21 1 49 78 21 24 4 86	17	30 Aqu Moon I L γ Aq r α P scium	21 55 11 58 22 4 21 86 22 27 28 32 22 52 46 00	Dec 1	Leon M on II L ρ Leo s 34 Se t t	9 33 16 25 9 51 1 84 10 25 2 08 10 35 0 71
21	θ Aquari Moon I L β P s ium γ ———	22 9 23 64 22 20 50 18 22 56 44 19 23 9 52 61	18	γ Aqua i α Pis um Mo n I L P cium —————	22 27 29 58 22 52 47 38 22 54 24 20 23 19 5 74 23 32 5 27	21	ζ A et g ——— Moo I L ω T u i	3 6 30 51 3 15 40 09 3 33 51 37 4 8 41 97
22	β Pisci m Moo I L Pisc um —————	22 56 46 44 23 10 13 55 23 32 45 88 23 52 8 59	19	Pisc um ————— M on I L δ P s ium	23 19 7 20 23 32 6 83 23 43 0 64 0 12 45 81	22	ω T u ————— Moon I L Tauri	4 8 44 01 4 20 7 22 4 25 53 96 4 54 23 30
23	P i c um ————— Moon I L δ P c um	23 32 47 62 23 52 10 27 23 58 46 93 0 41 27 59	20	d P sc m Moo I L P i cium	0 12 47 27 0 31 7 51 0 55 4 18	1845 Jan 17	δ A et Mo n I L γ T ur A ———	3 2 53 85 3 15 36 88 3 38 24 48 3 55 40 18
			21	Moon I L β A etis	1 19 31 00 1 46 16 39	18	γ T u A ——— Moon I L Taur	3 38 25 97 3 55 41 62 4 7 15 77 4 33 6 40 4 52 59 76
			22	β A etis Moon I L π Ari t s —————	1 46 17 71 2 8 46 48 2 40 51 63 2 50 34 35	20	C T ur	5 43 47 24

D	N	O T	D	N	O T	D	N	O T
1845		l m s	1845		h m s	1845		h m
J 20	M I L	5 52 19 18	Feb 15	ζ T u	5 29 1 59	Feb 28	β S p	15 57 24 03
	μ G m n o	6 13 47 04		β Γ	5 17 9 77		M o II L	16 3 57 05
	γ ———	6 28 57 46	16	ζ ———	5 29 2 97		γ Oph u h	16 14 22 94
21	μ G m n o	6 13 48 63		Mo I L	5 32 29 73	Mar 17	γ G m or	6 29 45 92
	γ ———	6 28 58 92		μ G m i o	6 14 14 94		M o I L	6 55 36 63
	M o I L	6 44 49 39		ι ———	6 29 25 27		ζ G m or	6 55 55 13
	δ Ge or	7 11 5 32	17	μ Gem	6 14 16 22		k ———	7 25 46 42
	k ———	7 24 59 02		Mo I L	6 24 56 23		g ———	7 38 9 59
2	δ Gem o	7 11 6 64		γ G r	6 29 26 70	18	Moon I L	7 46 51 00
	ι ———	7 25 0 44		ζ ———	6 55 36 07		θ C c	8 23 47 61
	Moo I L	7 36 40 13		δ ———	7 11 33 25		δ ———	8 36 54 89
	ζ C i	8 3 33 53	18	ζ G m or	6 55 37 36	19	θ C cri	8 23 49 04
	θ ———	8 22 59 57		δ ———	7 11 34 3		δ ———	8 36 55 90
23	ζ Canc	8 3 35 46		Mo I L	7 16 57 35		Moo I L	8 37 28 57
	θ ———	8 23 1 41		ζ C i	8 4 1 77		C c i	9 0 24 75
	M Cent	8 28 40 88	19	ζ Canc i	8 4 3 29	20	Canc i	9 0 25 67
	C ———	8 59 37 09		M o I L	8 8 20 14		ξ Lc nis	9 24 40 23
24	Ca c	8 59 38 35		δ C i	8 36 36 37		Mc n I L	9 27 42 11
	M II L	9 19 46 5		—————	8 50 44 59		π Leo is	9 53 6 25
	ξ L o	9 23 52 81	20	δ Ca cri	8 36 37 73		—————	10 1 11 69
	π ———	9 5 18 86		—————	8 50 45 99	21	π Leonis	9 53 7 80
	—————	10 0 24 35		Moo I L	8 59 2 7		—————	10 1 13 30
25	π Leo i	9 52 20 29		L s	9 24 20 83		Moo I L	10 17 59 09
	—————	10 0 25 65		—————	9 33 38 09		d L o	10 53 40 10
	M II L	10 9 11 56	21	Leo	9 24 22 23		ι ———	11 6 56 36
	34 S t n t i	10 34 6 36		—————	9 3 39 3	22	d Leo s	10 53 41 57
	d I or is	10 5 5 36		M I L	9 49 10 76		p ———	11 6 57 86
26	d L i	10 52 53 8		q I s	10 25 25 89		Moo I L	11 8 52 99
	M II L	10 58 3 38		34 S t n t i s	10 35 24 30		L is	11 30 9 15
	Le i i	11 29 21 4	22	q Leon s	10 25 27 33		β Vi is	11 43 45 52
	β V r g i s	11 42 57 74		34 S t n t i s	10 3 2 9	23	Leonis	11 30 10 77
28	γ V g is	12 12 22 29		Mo C c i t	10 40 31 00		β V i g i	11 43 47 21
	γ ———	12 34 12 08		Leonis	11 16 53 90		M n I L	12 1 3 97
	M II L	12 39 59 44	23	r Leo s	11 16 55 45		γ V i g i n i s	12 34 58 55
	V i g is	13 17 25 48		M II L	11 3 16 47	24	γ ¹ Virg n i	12 34 59 93
	m ———	13 33 5 43		γ V i is	12 12 48 92		ι ———	12 47 20 59
29	V g	13 17 27 06	24	Moo II L	1 24 9 38		M o II L	12 57 27 10
	M II I	13 33 45 62		—————	—————		V g	13 18 18 72
	V b	14 5 3 08	25	θ V r g is	13 2 49 10		α ———	13 42 39 33
	λ ———	14 11 8 95		Mo II L	13 17 51 78	25	α Virg	13 42 40 86
30	V is	14 5 4 61		V i g i s	14 5 31 32		Moon II L	13 54 9 36
	λ ———	14 11 10 36	26	λ ———	14 11 37 19	26	L br m	14 43 33 65
	M II L	14 30 31 95		V g n i	14 5 33 10		Moo II L	14 53 35 54
	L b m	15 3 50 4		λ ———	14 11 38 97		θ L b m	15 46 15 1
Feb 14	γ T u	3 38 53 15		M II L	14 14 6 73		β S o p i	15 57 40 87
	M o I L	3 47 44 23	27	L b m	14 43 13 84	27	θ L b m	15 46 16 93
	γ T i	4 11 35 21		—————	15 4 18 69		Moor II L	15 55 26 54
	—————	4 27 38 9		λ L b m	14 43 15 3		β Scorpu	15 57 42 54
15	γ Taur	4 11 36 41		—————	15 4 20 24	28	m Sco p	16 33 55 03
	—————	4 27 40 22		Mo II L	1 13 10 92		Moo II L	16 59 46 75
	Mo n I L	4 39 58 66		β S r p u	1 57 22 46		—————	—————
	β T a i	5 17 8 43		—————	16 3 56 14		—————	—————

D	N	O T	D	N	O T	D	N	O T
1845		h m	1845		h m	1845		h m
Ma 28	D Oph l	17 35 26 81	Ap 25	η Opl chl	17 2 16 80	June 17	Mo I L	15 25 55 52
				θ —	17 13 17 14		β S p i	15 57 5 82
29	D Opl l	17 35 28 39		M II L	17 39 38 02		—	16 20 35 11
	M II L	18 2 11 31		μ S g tt i	18 5 16 77	24	η Aq	22 27 45 69
	μ S g tt	18 5 49 11					Mo II L	22 48 26 91
	σ —	18 46 58 57	27	φ S g tt ii	19 13 31 28		γ P i un	23 9 29 98
	π —	19 1 51 99		Moo II L	19 34 29 69	July 13	M o I L	13 58 41 00
Apr 14	Mo I L	7 24 50 81			19 45 26 60		2 L b æ	14 15 13 87
	ζ C cil	8 3 44 0	May 16	d L ons	10 53 5 38		—	14 42 26 76
15	ζ C n	8 3 46 15		φ —	11 9 19 39	17	μ S g tt	18 4 27 74
	Mo I L	8 15 4 77		M o I L	11 11 19 54		Moon I L	18 11 17 60
	δ C c	8 36 19 23		β V g ni	11 43 9 75	24	P um	0 54 33 14
	α —	8 50 27 43					Moo II L	1 3 9 62
16	δ C i	8 36 21 09	18	M on I L	12 56 19 95	25	β A iet	1 45 41 81
	—	8 50 29 28		V g s	13 17 36 59		Mo II L	1 54 45 80
	M o I L	9 4 42 58		O —	13 38 16 75	Aug 12	S o p	16 1 55 4
	Leo	9 33 21 67	19	V g	13 38 16 75		M I L	16 3 49 16
	π —	9 52 30 57		O —	13 53 41 52		η Oph hi	17 0 25 73
17	Leonis	9 33 23 33		M I L	14 42 54 58		θ —	17 11 26 08
	π —	9 52 32 13	20	L b æ	14 4 55 60	13	η Oph ch	17 0 2 46
	Mo I L	9 54 11 33		M o I L	14 54 59 01		θ —	17 11 23 69
	φ Leo is	10 25 9 83		λ L b æ	15 44 57 65		M o I L	17 40 0 44
	34 Se t tus	10 35 8 34		β Sco p i	15 57 3 01		μ S g tt	18 3 23 92
18	φ Le i	10 25 11 57	21	β S p	15 57 4 10		A S C 2125	18 19 12 81
	34 S t nt	10 35 10 16		Moo II L	16 2 18 61	22	θ A et	2 8 1 86
	Moon I L	10 44 10 25					ψ —	2 20 50 12
19	Leo	11 20 33 20	22	η Opl h	17 2 7 76		M II L	2 21 48 71
	—	11 29 36 15		Moon II L	17 9 22 82		A iet s	2 48 5 49
	M I L	11 35 25 33	23	λ S g tta	17 51 58 52		δ —	3 1 17 49
	η V g	12 12 34 29		μ —	18 5 8 41	23	A t	48 50 05
	η —	12 26 22 83		M II L	18 16 27 67		δ —	3 1 14 97
20	η V g	12 12 5 93		π S g tt	19 1 11 31		Moon II L	3 17 38 41
	η —	12 26 24 75		φ —	19 13 19 21	Sept 9	M o I L	17 18 45 96
	Mo I L	12 28 44 49	24	φ Sag tta i	19 13 5 69		4 S g tt	17 50 12 04
	θ V g i	13 2 33 19		Moo II L	19 21 12 07		μ —	18 4 21 96
	α —	13 17 39 77		C p corni	20 9 51 55	10	4 S g tt	17 50 10 04
21	θ V g i s	13 2 35 05		φ —	20 20 25 51		μ —	18 4 19 61
	α —	13 17 41 59	25	C pncorni	20 9 51 93		Moo I L	18 21 35 46
	M I L	13 24 53 03		φ —	20 20 25 77		S g tta	18 55 13 73
	λ V g i	14 11 23 52		Moon II L	20 22 44 80		φ —	19 12 30 88
	2 L b æ	14 15 45 37		Aq i	21 1 33 28	11	S g tta i	18 55 11 51
22	λ V g i	14 11 25 33		β —	21 23 48 10		φ —	19 12 29 08
	2 L b æ	14 15 47 13	26	Mo II L	21 20 33 09		M on I L	19 24 2 14
	Moo II L	14 26 39 56		β Aqua	21 23 48 50		C p ieo n	20 9 15 12
	L b æ	15 4 5 53		30 —	21 55 31 77		φ —	20 19 49 02
	γ —	15 27 33 33		γ —	22 14 3 48	12	Cap ieo n	20 9 12 92
24	β Sco p	15 57 11 63	June 14	η Vi g ns	12 12 33 55		φ —	20 19 46 88
	—	16 20 40 48		Moo I L	12 31 49 28		Moo I L	20 25 5 31
	Moo II L	16 34 10 0		V rg	13 17 37 47			
	η Oph u hi	17 2 14 95	16	λ Vi g s	14 11 21 47			
	θ —	17 13 15 29		Mo I L	14 23 47 89			
				Libræ	15 4 1 82			

D	N	O T	D	N	O T	D	N	O T
1845		h m s	1845		h m	1846		h m
S pt 13	Aqu i	21 0 52 07	Nov 9	E P m	0 1 5 75	J 5	M I L	1 34 12 65
	f	21 23 6 97		d	0 11 38 78		A i	1 58 24 22
	M I L	21 21 13 06					θ	2 9 28 28
	θ Aqu i	22 8 22 32	10	d P m	0 11 36 26	6	M I L	2 26 38 79
	ζ	22 20 34 12		M I L	0 20 56 44		A i	2 50 19 30
14	M I L	2 21 26 13		P ci m	0 53 52 73		δ	3 2 44 48
	β P	22 55 40 38	16	M o II L	5 44 23 51	9	T i	4 53 49 38
	γ	23 8 49 00		/ G m o	6 12 45 38		y O	5 0 48 91
17	δ P cun	0 40 14 07		γ	6 27 55 45		M I L	5 5 37 03
		0 54 29 62	18	δ G m o	7 9 59 93		ζ I	5 28 22 25
	M o II L	1 7 52 95		/	7 23 53 48		z O o	5 45 11 3
	β A us	1 45 40 73		M on II L	7 27 41 83	10	ζ T u	5 28 22 35
19	π A i tis	2 40 11 12		ζ C c	8 2 26 59		/ O o	5 45 11 63
		2 49 53 66	21	Leo	9 31 56 70		M I L	5 58 22 17
	M o II L	2 55 33 44		π	9 51 5 54		γ G m o	6 28 44 51
	/ I i	3 37 48 79		Mo II L	9 52 44 19		ξ	6 36 34 60
20	/ T u i	3 37 47 12		q Leon	10 23 42 70	12	M on C nt	7 41 57 17
	Mo II L	3 49 20 74	Dec 6	β P m	22 54 49 77		θ Ca c i	8 22 43 67
	T i	4 26 31 67		γ	23 7 58 23		δ	8 35 50 67
		4 41 48 36		M I L	23 12 41 76	13	θ C	8 22 42 39
	Tau	5 17 46 03		ω P m	23 50 11 84		Moo II L	8 32 13 32
	c	27 49 33	9	/ P i cium	1 22 0 98		δ C	8 35 49 27
	M n II L	5 35 48 66		β Ar ti	1 44 54 59		L o is	8 59 17 79
	/ G minor	6 13 0 94		Moo I L	1 48 53 69	15	π L oi	9 51 56 53
	γ	6 28 11 20		ψ A i ti	2 21 8 56			10 0 2 22
Oct 8	S gtt i	18 59 26 04	10	Moon I L	2 41 29 50		M o II L	10 7 11 47
	Mc I I	19 3 33 55		ζ Ar t	3 5 49 7		q Leo	10 24 34 15
	e S gtt i	19 3 32 38	11	ζ Aret	3 5 48 93	16	q Leon	10 24 33 09
	C i ricorn	20 8 20 48		Moo I L	3 35 44 16		d	10 52 27 47
9	e S gtt i	19 32 30 83		δ Γ uri	4 13 49 22		Moo II L	10 53 48 92
	M i I L	20 3 46 99			4 26 50 98		Leon s	11 19 51 86
	C i corn	20 8 18 82	12	Tauri	4 26 50 32			11 28 54 78
	μ Aqu u	20 43 9 10		M on I L	4 29 23 47	17	Leonis	11 19 51 17
11	30 Aquar	21 53 55 68		T uri	4 53 38 78			11 28 54 28
	M I L	21 58 16 71	13	Tauri	4 53 37 88		M II L	11 40 44 08
	/ Aqua	2 26 12 00			5 15 7 17		η Vi g u	12 11 51 80
20	χ O s	5 43 48 38		Moo Cent	5 24 2 60		γ ^l	12 33 41 5
	Mo II L	6 5 25 85		η G m nor	6 5 19 13	18	Moon II L	12 28 43 85
No 7	β A i n i	1 22 28 86		μ	6 13 22 79		γ ^l V g	12 33 40 62
	λ C i ricorn	21 37 16 45	18	ξ Leonis	9 23 17 44		θ	13 1 47 72
	Moon I I	21 41 21 49			9 32 34 83	19	θ Vi g i s	13 1 46 91
	γ Aquar	22 12 43 84		Moon II L	9 35 37 63			13 16 53 20
	/	22 26 28 67		Leonis	9 59 48 77		M o II L	13 18 40 01
8	γ Aquar i	22 12 41 92	19	Leo	9 59 47 89		Vi g n	14 4 29 10
	/	22 26 26 44		Moon II L	10 22 24 85		λ	14 10 35 08
	M o I L	22 35 37 96	21	Leon s	11 28 39 72	Feb 3	Moon I L	3 1 34 17
	I sc um	23 18 2 41		β Vi g i s	11 42 14 96		η T u i	3 37 57 27
9	γ P i ci m	23 8 8 88		Mo n II L	11 57 5 42		λ	3 51 46 20
		23 18 0 34		γ ^l Vi g i s	12 33 27 04	4	η Tauri	3 37 56 75
	Moon I L	23 28 34 72	1846				λ	3 51 45 54
			Jan 5	γ Pisc um	1 23 8 87			

D	N	O T	D	N	O T	D	N	O T
1846		h m	1846		h m s	1846		h m
Feb 4	Mo I L	3 55 2 10	Mar 7	1 C	7 47 50 96	Ap 4	δ Gem or	7 10 46 88
	δ 1	4 16 11 68		8	g G m o		k ———	7 24 40 70
	————	4 26 41 81		8	1 C		Mo I L	7 37 7 92
5	δ T 1	4 16 11 14		8	Moo I L		s C	7 59 57 66
	————	4 26 41 45		9	δ C		Ca 1	7 59 58 07
	Mo I L	4 48 17 34		9	Mo I L		29 ———	8 19 53 72
	T 1	5 17 59 61		9	ξ Leo		M I L	8 26 30 26
	ζ ———	5 28 3 03		9	————		C	8 49 56 03
6	T u	5 17 59 39		9	————		————	8 59 16 66
	ζ ———	5 28 2 74		10	ξ Leo		C c 1	8 49 56 25
	M I L	5 41 4 52		10	Mo I L		————	8 59 16 83
	μ G minor	6 13 14 79		10	L		Mon I L	9 14 41 70
9	s C c 1	7 59 42 60		10	φ ———		L	9 32 48 60
	M I L	8 13 39 50		10	————		————	10 0 2 90
	29 C	8 19 38 20		11	Leo		Leo s	9 32 49 08
	δ ———	8 35 32 45		11	Mo I L		————	10 0 3 39
	————	8 49 40 39		11	φ L		Moo I L	10 2 11 33
10	δ Ca c 1	8 35 32 95		11	d ———			
	————	8 49 40 95		11	σ ———			
	M I L	9 2 11 23		12	d Leo			
	Leo	9 32 33 04		12	M I L			
	π ———	9 51 41 61		12	σ L			
12	φ Leo	10 24 20 6		12	————		β V g	11 42 35 54
	M II L	10 38 54 64		12	β V			
	σ L o	11 12 49 93		13	————			
	————	11 19 39 38		13	Leo			
15	Mo II L	13 2 49 10		13	β V g 1			
	ζ V g	13 26 29 90		13	M II L			
	m ———	13 33 11 30		13	γ V g			
16	ζ V g 1	13 26 30 02		13	ψ ———			
	m ———	13 33 11 41		14	γ V s			
	M II L	13 53 5 97		14	M II L			
	L b m	14 42 1 09		14	V g			
	————	14 48 4 07		14	ζ ———			
18	β L b m	15 8 22 47		15	V g			
	γ 1 ———	15 26 33 96		15	ζ ———			
	Mo n II L	15 44 27 70		15	Moo II L			
	σ S o p 1	16 11 28 88		16	λ V i g s			
	————	16 19 37 06		16	Mo II L			
Ma 5	β Tau	5 16 9 70		16	f Lib m			
	M I L	5 22 8 46		17	β L b m			
	O	5 58 22 83		17	f 1 ———			
	μ G m 10	6 13 14 75		17	M II L			
6	O onus	5 58 22 83		17	δ S p 1			
	μ Gem o	6 13 14 78		17	β ———			
	Mo I L	6 14 46 56		18	δ Sco p 1			
	Gem nor	6 36 14 88		18	β ———			
	λ ———	7 8 50 76		18	Mo II L			
7	ξ Ge or	6 36 14 72		18	φ Opl u h 1			
	Mo I L	7 6 9 29		19	γ Opl u ch 1			
	λ G m o	7 8 50 76		19	φ ———			
	g ———	7 36 48 60		19	M II L			
				19	λ S t 1			
				19	μ 1 ———			

D	N	O T	D	N	O T	D	N	O T
1846		l m s	1846		l m	1846		h
Ap 16	π S g t t a r n	19 0 35 99	M y 14	ϵ Sagitt	19 12 50 11	July 4	20 L b æ	14 55 35 19
				e ———	19 33 48 12		—————	15 32 36 11
17	π S g t t a	19 0 36 79	15	ϵ^1 S g t t u	19 12 49 92	5	L b r æ	15 32 34 92
	M o II L	19 9 45 62		—————	19 33 47 91		M I L	15 43 59 39
	Sagitt 1	19 33 42 91		Moon II L	19 51 40 09		S p	16 11 20 35
	C p r c o 1	20 9 30 55		β C p o	20 12 26 56		ϵ Oph u l	17 11 14 20
May 4	L o s	9 33 0 86		Aqua 1	20 39 24 32		D ———	17 33 39 89
	Moon I L	9 42 50 06	16	β Capr orn	20 12 27 71		M o I L	17 49 13 10
	α Leon s	10 0 15 49		Aqua u	20 39 25 95		S g t t	18 45 10 58
	ϵ ———	10 24 47 48		Moon II L	20 51 7 36		—————	18 54 54 62
5	Leonis	10 0 16 01		β Aqu	21 23 32 64	8	Sagitt 1	18 45 9 64
	ϵ ———	10 24 48 16		δ C p r c o r n i	21 38 37 68		M o o I L	18 54 19 85
	Moon I L	10 29 53 48	June 3	α Leon	11 22 37 78		ϵ S g t t a	19 33 8 72
	d Leo s	10 52 42 84		β V g n	11 42 51 46		C p r c o r 1	20 8 56 57
	—————	11 20 7 72		M o I L	11 44 30 82	Aug 1	Moon I L	15 17 57 97
6	d Leon s	10 52 42 84		η V r g i s	12 12 12 99		γ Lib æ	15 26 0 49
	M n I L	11 17 9 36		γ^1 ———	12 34 3 01		β S p i	15 55 35 06
	Leo 1	11 20 7 72	4	η Virg i	12 12 13 61		—————	16 19 4 37
	β V i g n i s	11 42 47 28		Moon I L	12 32 57 55	2	Moon I L	16 15 54 49
7	Moon I L	12 5 23 71	5	θ V r g i 1	13 2 11 62		S c p i	16 19 2 90
	η V g s	12 12 7 89		—————	13 17 18 09		η O p l u e l	17 0 37 24
	γ^1 ———	12 33 57 75		M o n I L	13 23 35 81	10	s Pis um	23 56 20 85
	θ ———	13 2 5 32		V r g i s	14 4 54 32		d ———	0 11 34 20
8	γ V i g n i s	12 33 57 45		λ ———	14 11 0 80		Moo II L	0 30 52 29
	Moon I L	12 55 24 69	6	V i g n i s	14 4 9 31	Sept 4	M o n I L	22 1 2 64
	θ V i g i	13 2 4 88		λ ———	14 10 15 23		η Aqu 1	22 26 53 48
	—————	13 17 11 50		M o n I L	14 16 2 51	29	d Sagitt 1	19 7 32 49
	—————	13 33 38 30	7	β L b æ	15 8 10 75		(ϵ^1) ———	19 11 39 24
9	V i g i s	13 17 11 46		Moon I L	15 13 25 07		Moon I L	19 30 56 52
	m ———	13 33 38 30		δ S o l	15 50 41 90		Cap r c o r n i	20 8 25 53
	M o n I L	13 47 53 60		β^1 ———	15 55 56 96		Aqua 1	20 38 15 33
	λ V g i	14 10 53 44	9	θ Oph u e l 1	17 11 58 77	30	Cap r c o	20 8 24 06
	Lib æ	14 42 28 74		Moon I L	17 16 52 75		M o n I L	20 31 16 25
10	λ V r g i n i s	14 10 53 47		Moon II L	17 19 17 39		Aqua u	20 38 13 98
	Lib r æ	14 42 28 74		μ^1 Sag t t a r n	18 3 58 31		—————	21 1 6 01
	Moon I L	14 43 19 55	12	α Cap r i c o r n i	20 8 51 30	Oct 1	Aqua 1	21 0 4 45
	γ Lib æ	15 27 1 73		Moo II L	20 29 34 37		β ———	21 22 19 31
	δ Scorpi	15 51 21 02		Aqua 1	20 38 40 91		Moon I L	21 31 6 40
11	γ^1 L b æ	15 27 1 67	14	Moon II L	22 26 25 57	5	P c u m	0 53 46 00
	Moon II L	15 44 6 89		ϕ Aquari	23 5 39 04		Moo II L	1 28 40 33
	δ Sco pu	15 51 20 91		ψ^3 ———	23 10 15 27		P i s c i u m	1 32 14 10
	—————	16 20 5 27	15	ϕ Aqu r u	23 5 38 84	8	Moon II L	4 24 3 34
	—————	16 26 25 09		ψ ———	23 10 14 77		T u r i	4 25 51 29
12	Scorpi	16 20 5 03		Moon II L	23 21 46 37		—————	4 52 39 53
	—————	16 26 24 70	July 3	m Virg n i s	13 31 3 36	9	M o n II L	5 20 53 07
	Moon II L	16 45 10 25		α ———	13 39 2 36		ζ T u i	5 27 11 31
	θ Oph u e l 1	17 12 39 74		M o n I L	13 50 4 06	29	Aqua	21 56 31 08
13	θ Oph u e l	17 12 39 85		Lib æ	14 39 53 96		Moon I L	22 6 14 81
	Moon II L	17 47 41 46	4	α L b æ	14 41 52 92		λ Aqu 1	22 42 58 76
14	Sagittar 1	18 45 48 80		Moon I L	14 46 13 12			
	Moo II L	18 50 16 90						
	S g t t a r n	18 55 33 12						

D	N m	O T	D	N m	O T	D	N m	O T
1846		h m	1847		h m s	1847		h m
O t 29	φ Aqu	23 4 44 83	Jan 7	Le	11 29 11 86	Feb 24	μ G m r	6 13 19 31
30	λ Aqu i	22 42 56 92		β V g n s	11 42 48 28		Mo I L	6 16 38 23
	Mo I L	23 3 9 56		Moon II L	11 48 3 72		ζ Gemino	6 54 39 07
	φ Aq	23 4 42 96		η V g i	12 12 9 46		δ —	7 10 36 17
	P um	23 30 24 28		γ —	12 33 59 11	25	ζ Gem o	6 54 38 88
31	ω Pi um	23 49 45 26	8	η V g n	12 12 9 12		Moo I L	7 10 2 50
	Moo I L	0 0 0 98		γ —	12 33 58 77		Gemino	7 34 49 58
	δ Pi c um	0 37 46 90		Mo II L	12 34 32 39	26	Geminor	7 34 49 99
	—	0 53 18 34		θ V g i	13 2 6 26		φ —	7 43 45 15
No 2	η Piscium	1 21 33 85	25	ξ Tauri	3 18 53 35		Moon I L	8 1 42 34
	β A t	1 44 27 60		Mo I L	3 47 13 55		δ Ca cri	8 35 37 00
	Moo I L	1 55 13 02		λ Tau i	3 52 12 88		—	8 49 44 76
	μ Cet	2 34 56 45		γ —	4 11 6 07	27	Canc	8 49 44 02
	δ A ietis	3 1 9 08		—	4 27 9 39		M on I L	8 51 36 66
3	μ C t	2 34 55 47	26	γ T u	4 11 5 31		ξ Le i	9 23 19 50
	Mo II L	2 56 7 77		—	4 27 8 81		—	9 32 36 71
	δ A ti	3 1 8 24		Moon I L	4 43 21 33	M r 1	L o	9 59 49 79
	A T i	3 53 54 13		ζ T u i	5 28 30 47		φ —	10 24 22 00
4	η Tauri	3 36 37 78	27	ζ T urr	5 28 29 29		Moo I L	10 27 7 99
	Mo n II L	3 54 59 09		Moo I L	5 39 1 63		Le n	11 12 51 54
	Tau	4 17 55 06		χ O on	5 45 18 61		—	11 19 40 89
	—	4 25 22 48		μ G m no	6 13 41 40	2	Leo	11 12 51 36
5	Ta i	4 17 54 32		γ —	6 28 51 64		Moo II L	11 15 5 93
	—	4 25 21 61	28	μ Gem or	6 13 40 78		L o i	11 19 40 68
	Mo II L	4 53 21 82		γ —	6 28 50 82		V g	11 37 36 16
	ζ T i	5 26 42 77		Moon I L	6 33 42 88		β —	11 42 20 07
	O o	5 57 2 65		δ Gemino	7 10 57 58	3	V g n s	11 37 36 02
7	μ Geminor	6 11 53 59	29	k Gem no	7 24 50 58		β —	11 42 20 30
	—	6 27 3 72		Mo I L	7 26 57 91		Moo II L	12 1 50 60
	M II L	6 45 33 18		ζ Ca cri	8 3 24 10		γ V g i	12 33 31 45
	δ Ge mor	7 9 10 08		—	—		δ —	12 47 30 34
	k —	7 23 8 55	30	ζ C cr	8 3 23 49	4	γ V g	12 33 31 49
30	ξ C t	2 20 37 79		Moon I L	8 18 27 53		Moon II L	12 48 28 16
	Mo I L	2 30 43 95		θ C n ri	8 22 49 53		V g	13 16 45 21
	μ Cet	2 37 16 73		—	8 50 4 51		ζ —	13 26 30 71
	δ A t	3 2 29 52		—	8 59 24 87	5	V g i	13 16 45 45
	f T u i	3 22 2 12	Feb 1	Moo II L	9 58 18 17		ζ —	13 26 30 87
Dec 1	γ A t	3 3 28 80		Leon	10 0 9 96		M II L	13 36 2 73
	f I	3 23 1 34		φ —	10 24 41 70		V g	14 4 21 47
	Mo I L	3 28 26 55	4	η Virg	12 11 58 34		λ —	14 10 27 15
	γ Ta	4 11 40 84		Moo II L	12 17 28 06	6	V g i s	14 4 21 35
	—	4 27 44 00		δ Virgini	12 47 47 13		λ —	14 10 27 39
2	γ T u	4 11 39 80	6	ζ V g i	13 26 44 93		Moo II L	14 25 6 89
	Mo I L	4 26 33 27		m —	13 33 26 43		β L b æ	15 8 23 51
	T	4 27 42 76		Moon II L	13 52 20 77	9	η Oph h	17 1 12 53
	—	4 54 31 69		Lib æ	14 42 16 32		Moo II L	17 5 11 69
	ζ —	5 29 4 57	23	M on I L	5 21 40 34		θ Oph uchi	17 12 13 12
1847				ζ Tau i	5 28 7 59		D —	17 33 52 01
Ja 6	d Leo	10 52 44 29		η G m o	6 5 16 11	24	Mo n I L	6 52 10 33
	χ —	10 57 11 98		μ —	6 13 19 85		ζ G m nor	6 54 29 88
	Moon II L	11 1 59 93	24	η Geminor	6 5 15 45		k —	7 24 20 38
	Leo i	11 29 11 75		—	—		—	7 33 40 40
	β Virgini	11 42 48 25						

D	N	O T	D	N	O T	D	N	O T
1847		h m s	1847		h m s	1847		h m s
Mar 25	k Gemi or Moo I L θ C cri δ ———	7 24 21 02 7 44 47 89 8 22 20 85 8 35 27 93	My 1	Moon II L α Scorpi	15 35 28 14 16 19 52 95	Aug 25	μ Capricorni	21 45 13 17
26	θ Cancer Moo I L ξ Leo s	8 22 21 61 8 35 20 72 9 23 11 59	3	η Ophiuchi θ ——— Mo n II L λ Sagitt ru	17 1 27 02 17 12 27 96 17 26 15 70 18 18 22 26	Sept 18	Moon I L S g ttari π ———	18 15 35 07 18 56 5 72 19 1 14 63
27	Moo I L Leo π ——— ———	9 24 6 41 9 32 29 15 9 51 37 90 9 59 43 56	4	μ Sagittaru λ ——— Moon II L S gitt u π ———	18 4 27 66 18 18 22 46 18 23 40 86 18 55 21 19 19 0 30 08	20	Capr corn Moon I L π C pr corni μ Aquaru	20 10 10 35 20 12 7 42 20 19 10 06 20 45 0 36
29	d Leo x ——— Moon I L Leo β Virginis	10 52 11 59 10 56 39 46 10 58 4 56 11 19 36 54 11 42 15 92	5	Sag ttari π ——— Moon II L Caprico n	18 15 21 56 19 0 30 39 19 21 34 06 20 9 23 83	Oct 18	Moon I L β Aquari δ Capricorni	20 44 58 27 21 23 48 32 21 38 53 89
30	Leo i Moon I L γ V gnis	11 19 37 15 11 44 22 81 12 11 37 99	6	Capr co ni Moo II L μ Aquaru	20 9 24 33 20 19 20 49 20 44 13 97	19	β Aqua δ C p o ni Moo I L γ Aquar λ ———	21 23 51 10 21 38 56 49 21 42 34 10 22 14 6 29 22 44 59 14
31	γ Virg nis Moon I L θ Vi gnis ———	12 11 39 06 12 30 59 64 13 1 36 20 13 16 42 61	25	Moon I L 61 Vi g nis ———	12 43 43 02 13 10 16 69 13 17 0 30	20	γ Aquari Moo I L λ Aquari γ P cium	22 14 8 71 22 40 37 60 22 45 1 72 23 9 38 00
Apr 1	θ V rgins Moon II L	13 1 37 49 13 20 32 39	26	Vi gi Moon I L Virginis λ ———	13 16 59 56 13 31 35 37 14 4 35 88 14 10 41 80	22	Moon I L δ P cium m Ceti	0 39 7 17 0 41 14 58 0 45 41 11
3	L b æ δ ——— Moon II L	14 42 2 59 14 52 25 61 15 59 59 39	June 2	Sag ttari Moo II L Cap i o ni	19 33 37 83 20 1 56 11 20 9 25 54	26	Moon II L ξ Tu i x Or o is	4 50 3 46 5 29 10 53 5 55 30 14
7	λ Sagt r i Moo II L Sagittaru ρ ———	18 18 11 36 18 41 4 10 18 45 26 19 19 12 27 27	3	Aquaru μ ——— Moon II L δ Capri corni Aquaru	20 39 14 76 20 44 15 16 20 59 48 15 21 38 26 33 21 58 0 91	Nov 16	θ Aquari γ ——— Moon I L λ Aquari	22 10 20 05 22 15 19 70 22 18 51 31 22 46 12 52
23	Can ri ——— M o I L Leonis ———	8 49 53 96 8 59 14 57 9 7 6 67 9 32 46 13 10 0 0 49	July 21	Moon I L β L bræ γ ———	14 29 29 42 15 8 37 74 15 26 49 60	20	Piscium 1 Cet Moon I L μ Cet Tauri	1 39 5 45 2 6 40 15 2 10 40 15 2 38 27 13 3 20 39 61
26	Leon s Moo I L π Virgini γ ———	11 22 19 61 11 28 18 48 11 52 51 52 12 11 54 60	Aug 20	Moon I L ρ Ophiuchi Serpentis	16 45 49 98 17 12 0 82 17 32 59 47	23	β Tauri Moon II L ξ Tu μ Gem or γ ———	5 18 34 57 5 21 5 90 5 30 27 12 6 15 38 97 6 30 48 91
27	π Vi ns γ ——— Moon I L δ Vi g i θ ———	11 52 51 86 12 11 54 99 12 14 44 05 12 47 44 08 13 2 52 29	21	ρ Ophuchi Serp nt s Moon I L μ ¹ Sagitta i ———	17 12 1 64 17 33 0 38 17 42 22 44 18 4 48 50 18 45 58 50	27	Moon II L Leon	9 11 33 73 10 2 20 28
29	ξ Vi g s m ——— Moon I L	13 26 44 62 13 33 25 97 13 50 29 91	23	e Sagittar i Mo n I L Capricorni Aquari	19 34 59 81 19 41 8 95 20 9 47 66 20 39 37 44	Dec 21	ξ Tau Moon Cent O oni μ Gemino	5 29 22 90 5 49 38 77 5 59 42 80 6 14 35 18
May 1	f ¹ Libræ	15 25 39 98	25	γ Capricorni Moon I L	21 31 52 63 21 42 39 88			

FINIS

